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ABSTRACT

This resource text was developed to assist parents, teachers, school administrators, school board personnel, and other concerned citizens in their efforts to develop and implement local education standards. Having drawn heavily upon Internet-accessible resources for the development and implementation of educational standards, the text is intended as a stand-alone resource for those without easy access to a computer and the Internet or as a resource which the Internet can supplement. After the Introduction, Section II, entitled "Rationale," provides full-text policy statements and position papers about the necessity of standards from various agencies and associations. Section III, entitled "Guidance/Resources," names and describes general and governmental resources, centers, clearinghouses, and organizations which offer products and/or expertise to support decision making about and implementation of standard setting efforts. Section III also provides full-text or excerpts of five authoritative pertinent documents, as well as a sub-section entitled, "Standards and Frameworks by State." Section IV, "Implementation and Assessment," offers overviews of state policies and practices for upgrading academic standards, including a section on the role of state education agencies. Finally, Section V covers "Examples of Local Schools/School Districts Adopting Education Standards." (Contains 8 figures and 15 tables.) (LMD)

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Developing and Implementing

Local Education Standards

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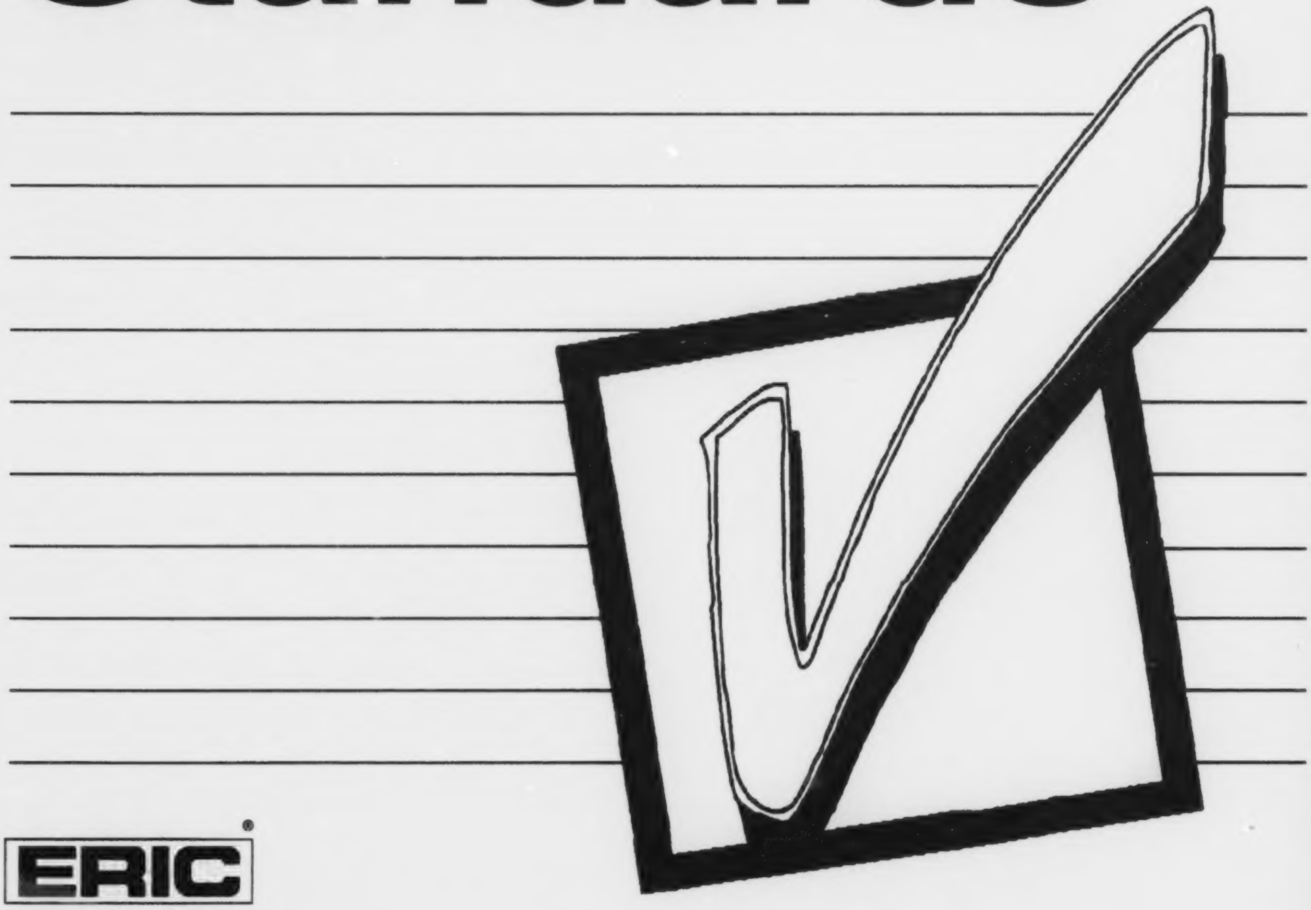

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Developing and Implementing

Local Education Standards

Edited by
Ronald Meyers

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ERIC Clearinghouse on Assessment and Evaluation

Development and Implementing Local Education Standards

edited by Ronald Meyers
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I. Introduction

This resource book was developed to assist parents, teachers, school administrators, school board personnel, and other concerned citizens in their efforts to develop and implement local education standards. In our judgement, this is one of the most important education issues at the local level. Districts are taking a hard look at their goals and objectives. They are defining what they want from their local schools.

We have scoured the Internet, looking at hundreds of sites selecting the best of the best to compile an easy to use resource book on standards. This book is intended as a stand-alone resource for those without easy access to a computer and the Internet, or as a resource which the Internet can supplement. The material is up to date as of July 22, 1997 and some as recent as mid-September 1997. Internet addresses are provided throughout the book so users can search these sites for more detailed information if desired and subsequently update information. We have tried to present both sides of the standards issue so that users can decide for themselves what will work best for them.

The very best and most comprehensive site on the Internet on the subject of standards is the Putnam Valley Schools (New York) site on Developing Educational Standards (http://www.putwest.boces.org/Standards.html). It is the primary source of information and it provides the core of the resource book. The Mid-Continent Regional Educational Laboratory (McREL) also has a wonderful site on standards. We have included several important reports and articles from McRel and information on the recent release "A Comprehensive Guide to Designing Standards-Based Districts, Schools, and Classrooms." Additionally, the American Federation of Teachers (AFT) has an excellent site highlighting their substantial work in the standards area, including the state by state analysis of state efforts compared to AFT criteria in the four core academic subjects.

This hardcopy reference provides the user with a variety of information regarding the development and implementation of education standards. A number of the articles, papers, and reports have been excerpted due to space limitations in the book, however, in every case the Internet address is included to permit users to look up the full document and associated material. You should go to that site for the latest updates and new information that may become available. Information from federal, state, national associations and interest groups is included to enable users to compare different approaches to implementing standards.

Information is included from proponents of standards such as the National Education Summit of 1966, U.S. Department of Education, the American Federation of Teachers, Education Leaders Council and *The U. S. News and World Report-School Standards Poll.* In order to provide a balance of information, we also provide information from opponents to standards such as Mathematically Correct, Eagle Forum, the Claremont Institute, and other organizations under the opposition in the Miscellaneous Resources section.

We have included a Chapter on Guidance and Resources. The General Resources Section provides information on content knowledge, a compendium of standards and benchmarks for review. Additionally, a must read paper entitled "Eight Questions You Should Ask Before Implementing Standards Based Education" and an historical piece on the fall and rise of standards based education is included. The announcement of Achieve, a national resource center with a searchable database of statements of educational standards by states and national professional organizations is also provided.

In the Governmental Resources Section we include information from the U.S. Department of Education, the National Education Goals Panel, the National Science Foundation, and the Eisenhower National Clearinghouse. The Section on Miscellaneous Resources includes information from a variety of sources such as *Education Week*, the ERIC System, the press, and opposition to standards. Over the last several years, many organizations have become involved in education standards. They are included in the Section on Organizations.

The Section of State Departments of Education provides Internet addresses for each of the state departments of education. The Section on Standards and Framework by Subject Area provides information for each subject area covered, listing organizations that are involved in that particular subject as well as what each state has done in that subject. In the last several years, there has been a great deal of activity at the state level in the area of developing and implementing education standards, the Section on Standards by State lists what is happening in each state by subject area where information is available.

The Chapter on Implementation and Assessment includes information in the Implementation Section on the standards setting process, developing content standards, a framework for managing reform, assumptions of standards based reform and their implications for policy and practice and a survey of state standards setting efforts. The Assessment Section provides information on designing a standards-based assessment system, an evaluation of state assessment programs by FairTest, and several ERIC Digests on related assessments topics form the ERIC/AE's searchable on-line database.

The final chapter provides examples of local schools / districts adopting higher education standards, including an article on how standards setting focuses reform in local districts. And from The Council of Great City Schools' report "Becoming the Best: Standards and Assessment Development in the Great City Schools", Appendix A: "Profiles of Great City Schools' Standards and Assessment Development Efforts" highlighting what has occurred by city and the contact person for further information.

We produced the resource book in loose-leaf notebook form for your ease in updating. While much of the material is from federally or state funded projects and in the public domain, a substantial amount of the material is not. Therefore, we suggest you contact the author(s) or sponsoring agency or organization before including any material from the resource book in widely distributed newsletters or commercial workshop materials.

We appreciate the following organizations and people for giving us permission to include their materials in this book:

- Putnam Valley Schools (New York) and their outstanding Developing Education Standards site and **Charles L. Hill** who's cooperation and assistance made this book possible
- Mid-Continent Regional Educational Laboratory (McRel) and their excellent site, **Robert J. Marzano, John S. Kendall, J.Timothy Water, and Franklin D. Cordell**
- American Federation of Teachers, **Bella Rosenberg**
- Education Leaders Council, **Gary Huggins and Joanna Cook**

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- Eagle Forum, **Phyllis Schlafly**
- The Council of Great City Schools, **Shirley Sc**
- Claremont Institute, **Ben Boychuk**
- Mathematically Correct, . . .
- Delaware Education Research and Developmen **K Foss**
- FairTest, **Bob Schaeffer**

We invite you to go to the chapter that you are most through the book however you wish—you don't hav resource book; we hope it is helpful in assisting you standards.

Dinah Monahan

hirley Schwartz

evelopment Center, **Paul G. Lemahieu and Helen**

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II. Rationale

WHY WE NEED STANDARDS

1996 National Education Summit Policy Statement

The quality of our schools is one of the issues fundamental to America's future and our quality of life. The primary purpose of education is to prepare students to flourish in a democratic society and to work successfully in a global economy. Governors and business leaders recognize that our nation's future depends on all students being able to perform to their highest potential. Our joint leadership in our States is imperative. Parents have the primary responsibility to make decisions about their children's education. States and localities are responsible for providing high quality educational opportunities. The nation's Governors have made the strengthening of schools a top priority. Business leaders understand that companies can be successful and the nation can be economically viable only if the United States has a world-class workforce.

Notwithstanding the progress that has been made, we agree that substantial and focused efforts must be taken to significantly accelerate student performance. In November 1995, the National Education Goals Panel marked the progress made in achieving the goals at the midpoint between the time they were established and the year 2000, when they are to be achieved. The report shows some positive developments, but it is clear that, at the current pace, we will not meet these goals in any area. The report also shows that limited information is being collected to help us understand how students are performing. While we remain committed to implement at the state and local level the education goals adopted by Governors following the Charlottesville Summit in 1989, it is clear that simply setting goals is not enough.

Why we have come together

As Governors and leaders of American businesses we have a stake in the quality and performance of schools in this nation. We are united by our civic responsibilities, our concerns as parents, and our common interest in securing a prosperous future for our states and companies in the twenty-first century. We are compelled by the urgent need for schools to improve and for student academic performance to rise. Students must be challenged to perform at higher academic levels and be expected to demonstrate mastery of core academic subjects. In addition to basic skills, all individuals must be able to think their way through the workday, analyzing problems, proposing solutions, communicating, working collaboratively and managing resources such as time and materials. Providing all citizens with the opportunity to develop these skills will give the people of our country a competitive edge. Today's economy demands that all high school graduates, whether they are continuing their education or are moving directly into the workforce, have higher levels of skills and knowledge.

Improving our schools for children is an investment in the future that cannot be postponed. The world and the economy are changing rapidly, but many of our schools have not kept pace. We believe that schools must be more focused on the needs of students, parents, post-secondary education institutions, and employers. States and local school districts must implement the appropriate calendar, structure, and requirements for student performance necessary to meet the needs of the next century.

We do not prescribe change simply for the sake of change. The only reason to undertake change is to improve students' academic performance. To do that we must help states or local school districts develop a consensus on what children should know and be able to do. To be sure, parents must play a key role in this process. We also recognize that, because of our legitimate differences in opinion regarding the content and methods of providing education, building such consensus may be difficult, but such difficulty should not deter us from achieving our goal.

Without such agreement from communities, students and teachers lack direction and focus to their efforts. This agreement will form the basis for developing high academic content and skill standards. Governors and business leaders must assist state or local school districts in developing assessments to measure student achievement and to use such assessments as measurements for providing students and parents with continuous feedback about student performance and specific areas where students may need some extra help. Finally, we must put in place the technology, professional development opportunities, and curriculum that will enable both parents and communities as a whole to hold their schools accountable.

Explicit expectations and school accountability

We believe that efforts to set clear, common, state and/or community-based academic standards for students in a given school district or state are necessary to improve student performance. Academic standards clearly define what students should know and be able to do at certain points in their schooling to be considered proficient in specific academic areas. We believe that states and communities can benefit from working together to tap into the nation's best thinking on standards and assessments. We also believe that these standards and assessments should integrate both academic and occupational skills. However, standards and assessments are necessary tools to inform and direct our work, not an end unto themselves. We recognize that better use of technology, improved curriculum, better trained educators, and other changes in the organization and management of schools are necessary to facilitate improved student performance. However, without a clear articulation of the skills needed, specific agreement on the academic content students should be learning, clear goals for what needs to be accomplished, and authentic and accurate systems to tell us how well schools and students are doing, efforts to improve our schools will lack direction.

We believe that setting clear academic standards, benchmarking these standards to the highest levels, and accurately assessing student academic performance is a state, or in some cases a local responsibility, depending on the traditions of the state. We do not call for a set of mandatory, federally prescribed standards, but welcome the savings and other benefits offered by cooperation between states and school districts and the opportunities provided by a national clearinghouse of effective practices to improve achievement. But in whatever way is chosen, standards must be in place in all of our schools and must be in place quickly.

Technology to give students the knowledge and skills they will need in the workplace

We are convinced that technology, if applied thoughtfully and well-integrated into a curriculum, can be utilized as a helpful tool to assist student learning, provide access to valuable information and insure a competitive edge for our workforce. It can be used by trained educators in classrooms and other places students learn, such as in libraries, in museums, and at home. Interactive learning enables parents and educators to find new ways to help students improve academically, while helping students learn to use the tools that are being used not only in today's high-technology workplaces, but increasingly in any workplace. We cannot reach higher standards without developing new approaches and strategies to help students, teachers, and parents. While not a silver bullet, technology is one important tool to accomplish this.

Governors and business leaders need to support educators in overcoming the barriers that impede the effective use of technology. Such barriers may include the complexities of planning for the acquisition and integration of technology into classrooms and schools; the high costs of acquiring, developing, and maintaining it; the lack of school technology policies; resistance to change from individuals both within and outside the education system; and most important, the need for staff development and curriculum change.

Why we believe in the use of standards to improve student achievement

We endorse these efforts because we believe it will:

- help all students learn more by demanding higher student proficiency and providing effective methods to help students achieve higher standards;
- provide parents, schools, and communities with an unprecedented opportunity to debate and reach agreement on what students should know and be able to do;
- focus the education system on understandable, objective, measurable, and well-defined goals to enable schools to work smarter and more productively;
- reinforce the best teaching and educational practices already found in classrooms and make them the norm; and
- provide real accountability by focusing squarely on results and helping the public and local and state educators evaluate which programs work best.

Why we believe in the use of new technologies to improve student performance

We endorse these efforts because we believe that new uses of technology in schools will:

- substantially improve access to the best instructional methods and materials for all students;
- give families greater access to teachers and schools to increase family involvement and improve student learning;
- provide students with the hands-on experience to develop the knowledge and skills they will need to compete successfully in the workplace;
- find and reinforce the best uses of technology that are already found in schools and classrooms and make them the norm;

- serve as a driving force for innovation and creativity in order to restructure every aspect of education, raise academic achievement, and increase the efficiency of school administration;
- offer teachers access to specialized support, collegial relationships, and professional development to increase their effectiveness with students; and
- provide new ways for students to work at their own pace, eliminating the ceiling for those who are already performing well academically, raising the floor, and providing additional assistance to those who need it.

What we commit to do

Swift action must be taken to address these issues. While we commend those states and school districts that have provided leadership to improve student performance, we urge greater progress, and for others, increased effort. We believe that standards can be effective only if they represent what parents, employers, educators, and community members believe children should learn and be able to do. However, the current rate of change needs to be accelerated, and no process or time line should deter us from the results. We believe that Governors and business leaders must provide powerful and consistent support to ensure that this effort moves forward swiftly and effectively.

This summit is intended to demonstrate—to parents, students, educators, and our constituents—our strong and nonpartisan support of efforts to:

- set clear academic standards for what students need to know or be able to do in core subject areas;
- assist schools in accurately measuring student progress toward reaching these standards;
- make changes to curriculum, teaching techniques, and technology uses based on the results;
- assist schools in overcoming the barriers to using new technology; and
- hold schools and students accountable for demonstrating real improvement.

What specific actions we will take

We commit to the following steps to initiate and/or accelerate our efforts to improve student achievement.

- **Implementing Standards.** As Governors, we commit to the development and establishment of internationally competitive academic standards, assessments to measure academic achievement, and accountability systems in our states, according to each state's governing structure, within the next two years. For this purpose, we agree to the reallocation of sums sufficient to support implementation of those standards within a clear timetable for a full implementation. Such funds should be available for the essential professional development, infrastructure, and new technologies needed to meet these goals.
- **Business Practices.** As business leaders, we commit to actively support the work of the Governors to improve student performance and to develop coalitions of other busi-

ness leaders in our states to expand this support. As such we will clearly communicate to students, parents, schools, and the community the types and levels of skills necessary to meet the workforce needs of the next century and implement hiring practices within one year that will require applicants to demonstrate academic achievement through school-based records, such as academic transcripts, diplomas, portfolios, certificates of initial mastery, or others as appropriate. We commit to considering the quality of a state's academic standards and student achievement levels as a high priority factor in determining business location decisions. We also agree to adopt policies to support parental involvement in their children's education and in improving their local school. Finally, we commit to developing and helping implement compatible, inexpensive, and easy-to-use products, services, and software to support teaching.

- **Public Reporting.** As Governors and business leaders, we commit to be held accountable for progress made in our respective states toward improving student achievement in core subject areas. First, we will establish an external, independent, nongovernmental effort to measure and report each state's annual progress in setting standards, improving the quality of teaching, incorporating technology, supporting innovation, and improving student achievement. To review student academic progress, we will explore the use of a reliable benchmarked assessment. Second, we will produce and widely distribute in each of our individual states an annual report showing progress made by both states and businesses in meeting our stated commitments and educating the public on the importance of these issues. Outstanding reports will be recognized annually by the chair of the National Governors' Association (NGA) at its Winter Meeting and will be widely disseminated within the states. Third, reports will be released at a high profile televised media announcement in each state, and we will work to coordinate the release nationally to help focus public awareness on this critical issue.

- **Information Sharing and Technical Assistance.** As Governors and business leaders, we recognize that states and communities will need resources and technical assistance to develop and implement standards and assessments, to ensure these standards and assessments are of high quality and truly world-class, and to ensure that other parts of the education system reflect and reinforce these standards and assessments. Where appropriate and useful, on a voluntary basis, we commit to work together to pool information resources and expertise to move our states forward on this agenda. We also commit to designate an external, independent, non-governmental entity to facilitate our work together on these issues, and provide guidance, help, and information to interested states and school districts. The Summit Planning Committee within 90 days will design such an entity and present it for adoption by the NGA Executive Committee which will then present it for endorsement to the NGA at the 1996 Annual Meeting. Finally, we commit to giving high priority to promoting professional development of educators, including efforts to improve instructional methods that use new technologies to help students achieve high standards.

- **Immediate Next Steps.** As Governors and business leaders, we commit to return to our states and immediately begin work on the tasks at hand. While the specific actions will be different in each state, Governors and business leaders will engage in a wide variety of activities to achieve the commitments stated above. To the extent necessary and not done already such activities may include: organizing town meetings to build public support and engage parents and communities in improving student performance; reaching out to other Governors and other business leaders to identify and adopt effective practices to improve achievement and look for opportunities where states and businesses can work together, arranging for teaching professionals to visit businesses throughout the states to help them develop a better understanding of the needs of employers; organizing a state-level Education Summit to design a state-specific plan for developing and implementing standards and assessments; and reviewing current state efforts to report on educational performance and prepare for the report of next year's release.

U.S. Department of Education:
High Standards for All Students, October 1994

Why do our children need high standards?

When you get on an airplane, you want a pilot who has been held to the highest standards of flight training. When you need an operation, you want a surgeon who has been held to the highest standards of medical education. And when you root for American athletes in the Olympics, you know they won't win the gold unless they have trained to meet the highest standards of international competition.

In many areas of our life, we expect-and demand-high standards. We know their great value. They help bring out the best in us.

When we do not hold all students to high academic standards, the result can be low achievement and the tragedy of children leaving school without ever having been challenged to fulfill their potential.

But a historic change is now taking place in American education: the development of model standards that will clearly identify what all students should know and be able to do to live and work in the 21st century. These standards will be designed to be internationally competitive.

The movement to develop standards has already begun. The National Council of Teachers of Mathematics has prepared **mathematics** standards, and the U.S. Department of Education is funding the creation of model standards in the **arts, civics and government, economics, English, foreign languages, geography, history**, and **science.**

What are these standards?

Content standards define what all students should know and be able to do. They describe the knowledge, skills, and understanding that students should have in order to attain high levels of competency in challenging subject matter.

Performance standards identify the levels of achievement in the subject matter set out in the content standards. They state how well students demonstrate their competency in a subject.

The standards will be voluntary, not mandatory. They will stand or fall depending on whether they are accepted by teachers, administrators, parents, and the public. No federal mandate will impose the new standards. States may use these standards as models in developing their own content and performance standards.

How will high standards make education better?

Establishing high standards lets everyone in the education system know what to aim for. They allow every student, every parent, and every teacher to share in common expectations of what students should know and be able to accomplish. Students will learn more when more is expected of them, in school and at home. And standards will help create coherence in educational practices by aligning teacher education, instructional materials, and assessment practices.

Why does American education need standards?

American education has never had national standards. When no one agrees on what students should learn, each part of the education system pursues different, and sometimes contradictory, aims.

The new improvement of American education begins with an agreement about **what students should learn**—a set of benchmarks that states may use as guidance in developing their own content and performance standards. But this will NOT be a national curriculum.

Meaningful model standards will help state officials, local educators, teachers, parents, and others to establish challenging standards for students to ensure that the education system will focus on providing the opportunity for all students to learn to high levels. This can lead to:

- Textbooks that will emphasize student understanding;
- Student assessments that will test whether students understand and can use at high levels the knowledge and skills in the content standards;
- Instructional programs and methods that will emphasize not only the basics but also reasoning and problem solving;
- Teacher education and professional development that will prepare educators to teach to challenging standards; and
- New technologies that will increase learning to meet high standards geared to internationally competitive levels of performance.

How did the movement for national standards begin?

In 1989, President Bush and the nation's governors, with leadership from then-Governor Bill Clinton, met in Charlottesville, Virginia. They agreed that the nation must set ambitious education goals. These bipartisan National Education Goals are the basis of the recently passed Goals 2000: Educate America Act, President Clinton's landmark education initiative.

The Goals included a pledge that by the year 2000, all American students would demonstrate competency in challenging subject matter. To provide direction, the Congressionally established, bipartisan National Council on Education Standards and Testing recommended the development of voluntary education standards that would provide the needed focus for state and local efforts.

How are standards being developed?

The U.S. Department of Education, other federal agencies, and foundations have made grants to major professional and scholarly organizations to develop model standards in different subjects. Each standards-setting project includes a broad range of people in the process. Thousands of teachers, scholars, administrators, parents, and other members of the public are participating in shaping the model standards. These standards will undergo extensive review to affirm their national status, including certification by the National Education Standards and Improvement Council established in the Goals 2000: Educate America Act. Certification will indicate that the standards are challenging, consistent with the best knowledge about teaching and learning, and have been developed with broad input from educators and others.

What is the role of the states?

A number of states have begun to develop or are revising their own state content standards (sometimes known as state curriculum frameworks). Using the expertise of classroom teachers, parents, scholars, public and private school administrators, elected officials, businesses, and the community at large in advisory groups, the states are defining content standards to meet their own needs. These state standards will act as blueprints for local schools, districts, and others to develop the classroom materials and lessons for a single subject or combination of subjects. They will also establish guidelines for effective teacher preparation, professional development, and certification.

In addition, the new Goals 2000: Educate America Act will provide funds to the states to develop their own state improvement and implementation plans that will include content and performance standards and valid assessments aligned with the standards. The setting of state standards can be informed by the model standards. The state plans will also include voluntary standards or strategies to ensure that all students have a fair opportunity to achieve the knowledge and skills described in the state content and performance standards.

American Federation of Teachers

A System Of High Standards: What We Mean and Why We Need It

(Resolution Passed by AFT Executive Council, February 15, 1996)
American Federation of Teachers

THE FOUR ESSENTIAL ELEMENTS

1. COMMON ACADEMIC **STANDARDS** Common, publicly known **standards** for what students should know and be able to do at each grade level.
2. ASSESSMENTS Exams administered by the state that measure student progress towards the **standards.**
3. EXPLICIT REWARDS FOR ACHIEVEMENT Incentives for students to work hard in school, such as eligibility for college and training programs and preference for hiring based on academic achievement.

4. STUDENT OPPORTUNITY A systematic effort to identify students who are not meeting the standards and provide them with early, effective assistance.

WHAT WE CAN DO NOW

1. CONSISTENT GRADING Grading policies that reduce the current variation in what grades mean so that an "A" in one class has the same meaning as an "A" in the same subject/grade in any other class in the school.
2. EARNED PROMOTIONS A student promotion policy that assures that only students who are ready for the next year's work are promoted and that students who are unprepared for the next grade get the specialized, intensive help that they need.
3. CHALLENGING COURSES Challenging courses available for all students, and advanced courses available at all secondary schools, not just privileged ones.
4. EXPLICIT GRADE AND COURSE GOALS Parents, students and teachers get a written explanation of what a given course or grade level expects of students.
5. CHALLENGING HOMEWORK Homework policies which assure that all students will have the advantage of a high-quality, demanding homework load.

A system of high standards: What we mean and why we need it

The AFT has launched a national campaign on behalf of standards for student conduct and standards for student achievement. We believe these two education reforms are fundamental and that without them no other school reforms can work.

But what do we mean when we say we need standards for student achievement? Do we simply mean that teachers should demand more from their students? That students should exert themselves more? Is it simply our schools' failure to expect enough from our students that has left our students undereducated?

We believe that everyone—parents, teachers, administrators, policy-makers—must expect the best of students and act accordingly. But we don't believe that the highest possible standards can be achieved and maintained in schools (or anywhere else) simply by individuals acting on their own to do their best and to bring out the best in students.

IN ALL WALKS OF LIFE, when quality really matters we put systems into place—with rules, practices, incentives, penalties, and supports—that help all of us to maintain high standards. We do so because we understand that individuals do their best, are the most productive, and reach higher goals when they are working in a system that supports their best efforts.

Take for example, an airline that desires a perfect safety record. The pilot plays a key role in this, but he cannot achieve perfect air safety unless a whole safety system is in place: Experts must set forth standards for what defines a safe plane. Mechanics must certify only planes that meet the standards. Supervisors must agree that the standards must be met—even if it means the plane will be late or the flight canceled and that passengers will complain. Diagnostic systems must be in place so that mechanics can identify problems before they become crises. The resources must be in place to solve the problems. Without this whole, supportive system, the airline will not realize excellent air safety, no matter how talented and conscientious the individuals on its staff.

In schools today, individual teachers strain tirelessly to help students reach their academic potential. But our schools have nothing to compare with the system of standards, monitoring and tough judgments by which pilots, mechanics and flight supervisors do their work. In many cases, the "system"—the rules, the culture, the incentives—work against top student performance. For example:

- Teachers who insist that students master challenging work by taking difficult exams, completing tough projects and doing lots of homework can find themselves under pressure to back off. In one extreme case, when Adele Jones, a Delaware teacher, failed a large number of the students in her algebra class, the school district tried to fire her. Nearly one third of AFT teachers report feeling pressure to give higher grades than students' work deserves. Nearly half (46%) say they have experienced pressure to pass along to the next grade students who are not ready.
- When every teacher sets his or her own standards, those standards appear idiosyncratic and are therefore negotiable to students. Moreover, students will often regard more demanding teachers as gratuitously mean. After all, the teachers don't have to demand so much, so why else would they? Students then try to negotiate these teachers' standards down—by failing to do the homework, for example. Teachers are left to expend valuable time and energy swimming against the cultural tide, with no institutional support, trying to cajole students to meet high standards.
- Good grades were once the required currency for college admission, and a high school diploma was once a pretty good ticket to a decent job. But today good grades aren't necessary to enter most colleges and employers are reluctant to hire high school graduates for any but the most menial jobs.

WHAT ARE THE ELEMENTS of a system that would enable educators to demand—and get—top academic performance from students? That would elicit the maximum effort from students so that they could reach their maximum academic potential? We believe there are four essential elements: rigorous academic standards, assessments to measure student progress towards the standards, incentives for students to do the hard work that learning requires, and opportunity for students to confront challenging material and receive extra help when they need it.

We present here these four elements, which are the bedrock of the world's most successful school systems and must constitute the foundation of a much reformed, improved American education system. We then offer examples of how these elements might look when implemented, and several steps that schools and school districts can take right now to shore up standards immediately as states enact the fuller systems.

The Four Essential Elements

1. Common, rigorous standards for academic achievement

The first essential element in effective schools systems is the existence of academic standards at the national or state level. These specify what students need to learn—and how well they need to learn it—in each subject at each grade level. Students should be taught to the same standards in the early grades, but at some point, probably in high school, students will enter different educational programs on the basis of their achievement (not aptitude) and future aspirations. The curriculum will be different in each program, but standards will be high and challenging in all of them. And students who want to apply to change educational programs will have multiple opportunities to do so.

These common standards will enable teachers to provide students with consistent, coordinated instruction that builds on what students have learned in previous years. In contrast, teachers today face classrooms each fall filled with students who have mastered very different material and who have reached very different levels of achievement. Teachers must spend weeks and weeks determining what their students know and can do and weeks more bringing them to a common starting point.

Moreover, a single set of expectations for what students should learn also helps to reduce some of the pressures that work against academic rigor. Students won't be able to complain that their schoolmates get to study easier material or have to do less work.

Used as the basis for the system described below, common standards will nourish a culture of high expectations and empower teachers to maintain high standards. For common standards to support high achievement they should:

- be specific about what students are expected to learn at each grade level, so that teachers will interpret them similarly. For example, a **standard** that calls for fourth graders to "understand the processes of photosynthesis. . . . ." provides more direction than a **standard** that makes a vague call for students to "understand scientific processes."
- be set at the state level so that students transferring from district to district will arrive at their new schools prepared.
- be rigorous at all grade levels and in all educational programs in order to stretch students to reach their maximum potential.

2. State-administered assessments

The second essential element of our system is exams, administered by the state, that measure student progress towards the standards and that effect students' eligibility for such privileges as entry to college or technical schools.

Because these exams, and the rewards they elicit, will be tied to the classroom curriculum, students will know that they must study hard—not only in the year they take the exam but also in the grades leading up to that point. For this reason, where such exams exist abroad, peer pressure works in favor of high achievement. Students favor studying hard, because it will pay off for them; they exert pressure against "class clowns" because they see them as interfering with their chances to succeed.

Significantly, with these external exams, it is not the teacher who has decided what and how much the student must learn; it is the state or national government. The teacher is there to help the students meet these standards, much as a coach is there to help the Olympic athlete.

3. Explicit rewards for achievement

In all of the Asian and European school systems where student achievement is so high, secondary school students turn off the TV set and study diligently because they know that unless they pass their exams, they will not get into a college, technical institute or apprenticeship program. They may not even get a job because employers hire on the basis of school records. Students get more than one chance to pass the exams, but ultimately the standards must be met.

In the US, academic achievement offers far less pay-off. For most students, there is a college willing to take them, no matter what courses they took, no matter what their grades. Employers may care about whether a student has received a high school diploma or not, but they don't ask what grades students received or whether students earned those grades in the most basic courses or the most advanced.

Given the lack of reward for academic effort, it's hardly a wonder that students who study hard are derided by their peers for their unnecessary exertion and treated as social outcasts. Learning complicated material requires diligent studying and constant practice, which most students won't undertake unless there are clear, significant incentives for doing so. Incentives should include access to higher education, training, and jobs, but should also include more immediate rewards, such as prestigious citations, special trips, and scholarships—and more immediate consequences, such as required summer and weekend catch-up classes (which would also signal students that they might as well learn the material the first time, since eventually they will have to learn it).

4. **Opportunity for students to reach the standards**

When you establish clear goals for student achievement, and then attach rewards for students who meet those goals (and negative consequences for those that don't), you create powerful incentives for young people to work hard and do well in school. But still some students will struggle and fall behind, even some who work hard.

Most teachers spend time before or after school or at free moments during the day helping students who are struggling with their school work. But they are typically all alone in their efforts to help those students succeed. Students who are trying to succeed need more structured, formal opportunities to receive timely, effective supplemental instruction.

Without standards in place, it's easy for students to be passed along from grade to grade, falling further and further behind and never receiving the help they need. Once standards are in place, the emphasis can be on early identification of learning problems. Teachers can assess whether students are reaching the set standard with standardized diagnostic tests or other tools. Resources—tutors, instructional materials that use different pedagogical techniques, additional time, guides that enable parents to help students at home—can then be made available in order to systematically provide the extra, effective instruction the students need. Once rewards and consequences are in place, students will be more motivated to take advantage of the resources. For example, schools could make available summer school programs where students would not Just mark time but struggle to master the material in order to pass a necessary exam.

What Would This Mean In Practice?

What we've offered here is a set of elements essential to creating a system that can help students reach their academic potential. We haven't offered a blueprint for how the elements should be realized in practice. For example, at what age would students take the external exams, what rewards for high achievement would they earn, and how would they be provided the opportunity to catch up if they were falling behind? To give a sense of the variety of ways in which these elements can be implemented, we offer these four suggestive vignettes, from schools, school systems, and other countries.

- IN FRANCE, virtually all students take the same challenging, liberal arts curriculum through grade nine (There is no ability grouping and no tracking for these students.) After grade 9, students can choose among a variety of specialized secondary school programs, some academic, some academic/ vocational. The academic programs include rigorous academic courses and end with college entry exams that must be passed, in order to attend any college. The vocational programs include half time in a full range of academic courses and 1/2 time in vocational courses; to graduate from secondary school, students must pass academic and vocational exams. The result is that all students must work at their academic studies; all students end up with earned certificates that are highly regarded by employers, technical schools, or universities. Although high school graduation requirements are so much higher than in the US, graduation rates are higher than here:
- IN JAPAN, all elementary students take the same curriculum; there are no ability groups in reading or math and students are not assigned to classes based on ability. Because the curriculum is very specific and it is clear what students are supposed to know and be able to do, when students are falling behind, it is immediately apparent. Teachers' days are structured so that they have time during the day to individually tutor the students who need help. And in many cases, parents will enroll their children in special after-school programs where students can receive the instruction they need to catch up with their class.
- IN NEW YORK STATE, all students have the option of taking "Regents" (college preparatory-level) courses during their secondary years and then taking Regents exams before they graduate. Students who do pass the exams will have this noted on their diplomas for all to see, and New York's state university system gives preference to students who score well on Regents exams. New York is the only state in which a large number of high school graduates participate in a curriculum-based examination system. The system works; notably, when you control for family income, parental education, race and gender, New York has the highest average SAT scores of any state.
- AT THE BARCLAY SCHOOL IN BALTIMORE, Maryland, where virtually all of the students receive free lunches, teachers use a very specific, challenging curriculum. (It is the same curriculum used by the prestigious, private Calvert School, whose students come from much wealthier families.) After four years of using this curriculum, reading scores which had been under the thirtieth percentile are now at or above the fiftieth. A research report indicates that the basis for the terrific improvement is the very specific curriculum. As in Japan, the specific curriculum makes it possible to quickly identify students who need extra help-Plus, it enables teachers to devise, share, and institutionalize the most effective ways of teaching each part of the curriculum.

What To Do Now

ENACTING A SYSTEM based on these elements will require tremendous input from educators and the public and will require action by state legislatures, state school boards, school districts, state university systems, private colleges and business. As the system is being put into place, what steps can be taken right now to shore up standards in our schools today? Are there initiatives that individual school faculties can undertake? Steps that we can encourage our school districts to take that don't require prior state action? Yes. We urge action in the following four arenas.

1. Consistent grading

Why?: Today, in most schools, a teacher's grade represents only one teacher's judgment of what an "A" a "B" or a "C" means; teachers differ about how much and how well students must do in order to earn a given grade, and they differ about such issues as how much weight "effort" should carry relative to achievement. So, when students or parents ask to have a grade changed, a teacher (or principal, or district office) has little defense because there is no commonly accepted grading **standard** to point to. Moreover, the grading practices of the "easy grades" down the hall can undermine other teachers' efforts to give high grades only for top work.

To add to the problem grades may be based on a curve—determined by the relative performance of students within the class, not each student's actual mastery of the material. Students know that by doing well they will "wreck the curve" and cause everyone else (including their friends) to get low grades; peer pressure encourages students to withhold their best efforts. By contrast, when grades are based on objective criteria and absolute mastery, everyone has an incentive to excel.

What?: Once we have common standards established at the state level and exams that measure student progress towards them, there will be a common "anchor" for teacher grades. But now we can do the following to protect the integrity of teacher grading decisions and to make grades a powerful tool in promoting a culture of high standards and achievement.

- Teachers who teach the same subject and grade in a given school should arrange to consult regularly in order to standardize the criteria they use to grade student work (e.g. effort, improvement, writing quality, subject mastery ...) and agree upon the quality of student work that will merit a given grade.
- Through such discussions, school staffs could agree to base student on what students have actually learned, not on a curve. In some schools, this could require a modification of a districtwide policy.
- Where they don't already, school staffs could agree to report separate grades for academic achievement and other achievements such as "effort," "conduct" and "improvement."

2. Earned promotions

Why?: Most teachers encounter intense pressure from parents and administrators not to fail students, whether or not they have mastered the material for a particular grade. Often teachers themselves believe it is unfair to hold kids back when other students in other classes or schools who have learned even less are passed on. And teachers recognize that simply repeating a grade is unlikely to improve the student's achievement.

But social promotion sends an awful message to students—that they can get by (and stay with their friends) without learning anything. Plus, it is unfair to the students in the next grade whose education is held back as teachers try to help the students who are unprepared for grade-level work.

What?: We recommend that the following steps be taken. Where possible, schools should adopt these practices; in some cases, it may require the support of the school district.

- Eliminate arbitrary mandates for promotion such as capping the number of students who can be retained in a given grade or by only allowing students to be held back in certain grades and not others.
- Grant teachers the authority to promote and retain students based on grading criteria that reflect student mastery and are based on commonly adopted **standards** within the school. These decisions should not be subject to reversal by principals or other administrators.
- Provide intensive tutoring or special, high-quality instructional programs for students who are in danger of being retained or who have been retained.

3. Challenging courses

Why?: The evidence is clear that students learn more when they take more advanced courses. But too often, students are not required (or even encouraged) to take the more advanced courses that they could handle, and too often the advanced courses aren't even offered, especially in rural and inner-city high schools. We recommend that schools and districts move towards the following:

What?:

- Secondary schools should offer advanced courses in each of the core academic subjects; these courses could be offered through the Advanced Placement program. In South Carolina, a new state law that requires every high school to offer at least one Advanced Placement course and that pays students' AP fees has meant the number of AP exams taken in the state's public schools-has quadrupled in ten years—from about 3,000 to about 12,000.
- High school transcript practices should be reviewed to assure that students who take hard courses are not penalized. For example, GPA's should be calculated in a way that gives extra weight to advanced courses and diplomas could carry a special endorsement if a certain number of advanced courses were taken.
- School staffs and parents could lobby the school board to raise high school graduation requirements. Recently, New York City began requiring all high school students to take three years of Regents (college-prep)-level courses in both math and science. As a result, 21,000 more ninth-graders took and passed Regents level science courses last year.
- Elementary schools should review the curriculum that is offered to students in less advanced reading and math groups. While students don't learn best when they are overwhelmed with overly difficult material, there is abundant evidence that students in the lowest reading and math groups often lack access to sufficiently challenging material.

4. Explicit Grade and Course Goals

Why?: Parents, students and teachers all need a clear picture of what a given course or grade level expects of students. Presently what constitutes success or mastery is so variable as to be meaningless. Third grade math in one school may be second grade math in another and fifth grade math in yet another. Parents have little to guide them on how to help their children or to confirm the successful completion of relevant homework. Students drift without a firm sense of what they need to learn at the beginning, middle and end of a course.

What?:

- Schools should provide parents annually with a written statement describing what students are expected to master at each grade level in core subjects.
- At the secondary level, descriptions should explain each course, including its content and the skills anticipated with successful completion.
- Specific times for reports, consultations and report cards should be provided to parents at the beginning of the school year, along with an explanation of exactly what the reports and meetings mean and how parents can use the results to motivate their children.

5. Challenging homework

Why?: Studies show, not surprisingly, that students who do homework learn more. Homework in effect expands the school day, allowing students more practice with the material while freeing class time for more direct instruction. It also helps build self-discipline and independent work habits. When the homework load is not coordinated among teachers, the result can be too much homework (particularly at the secondary level where a student has many teachers) leading to pressure for less. Or the result can be that teachers assign uneven amounts, often leading to pressure on the more demanding teachers to lighten their assignments in order that their students not be subjected to an "unfair" amount of work.

What?:

- Establish a common homework policy for the school. Elementary teachers who teach the same grade may agree to assign comparable amounts of homework. Secondary teachers may need to coordinate their assignments so that students get a healthy dose, but not an overwhelming amount, of work each night.
- Communicate the homework policy to parents. If parents know how much work their children should be bringing home, they will be better positioned to make sure it gets done.
- Homework should be well-designed, offering both practice in what's already been taught and a chance for students to go beyond the classroom instruction. Assignments should not depend on resources that students may not have access to.

High Academic Standards Work—Here's the Evidence

Many surveys and polls show widespread public support for tougher academic standards.

The 1995 Phi Delta Kappa/Gallup poll on education found that 87 percent of respondents favor setting higher standards in the basic subjects for promotion from grade to grade, and 84 percent want higher standards for graduation. A 1992 Business Week survey found that 96 percent of Americans favor tougher and more challenging basic courses in subjects like reading, writing, math and science. The majority of teachers agree. Fifty-nine percent of high school teachers and 55 percent of all urban teachers say that standards are too low.

Its one thing to have public support for raising standards, but evidence that they actually do work to raise student achievement is another matter. Some people worry that higher standards will mean more students flunking and more dropouts. Others are concerned that poor, minority children will be harmed disproportionately by higher standards. But the evidence shows that students can do it—when standards are raised, students respond.

Its important to take a long-range view of this issue. Yes, in the short run, some students may have difficulty meeting higher standards. But standards and new requirements can be phased in, and, with proper help and incentives, most students can eventually succeed.

We can't point to an exemplary system of standards here in the United States, so the evidence for the effects of raising standards is drawn from a variety of sources. Here's some of the evidence showing that standards work:

1. In 1982, the National Commission on Excellence in Education recommended that all high school students take a core curriculum with four years of English and three years each of math, science, and social studies.
   - A decade later, the percentage of high school students completing such a curriculum nearly quadrupled—from 13 percent to 47 percent.
   - During the same period, the numbers of students who dropped out between 10th and 12th grades declined overall from 11.4 percent to 6.2 percent. For white students, the figures went from 10.2 percent to 5 percent. For African-American students, from 13.5 percent to 7.9 percent. And for Hispanic students, from 19.2 percent to 12.1 percent.
   - Between 1982 and 1992, the percentage of students taking traditional academic courses in math and science rose dramatically. So has achievement in these subjects. The average NAEP (National Assessment of Educational Progress) math score for a 17-year-old was nine points higher in 1992 than in 1982—a gain of about a year of achievement.
2. Many studies show a connection between student achievement and enrolling in challenging courses. In other words, more demanding coursework leads to higher achievement.
   - A study sponsored by the College Board found a strong correlation between academic coursework and college attendance. Approximately 40 percent of white students take geometry in high school compared with 19 percent of African-American and 17 percent of Hispanic students. However, among students who have taken geometry, the rate of college attendance is nearly identical: 80 percent of African-Americans, 82 percent of Hispanics, and 83 percent of white high school graduates will enroll in college within four years.
   - According to data from the 1992 follow-up survey of the National Educational

Longitudinal Survey (NELS), which examines student progress from 8th through 12th grade, students who complete more math and science courses show greater achievement scores during high school. Additional coursework pays off about equally for all students, regardless of gender, race or ethnicity, or socioeconomic status.

- Rigorous coursework can wash out the differences in achievement between public and private school students. Figures from the 1990 NAEP show that, for 12th-grade students taking similar math courses, the differences in achievement between public and private school students virtually disappear. For students taking upper-level math courses (algebra II, pre-calculus, and calculus), public schools students outperformed private school students. There are similar results in science, again with public school students outperforming their private counterparts at the upper levels.
- In Fall, 1994, the New York City public schools began requiring all high school students to take three years of Regents-level (college preparatory) courses in math and science. As a result, 48,080 out of the city's 54,221 9th-graders took Regents-level science courses, compared with 20,485 who took the same courses the previous year. Although the failure rate for the courses increased from 13 to 25 percent the first year, 21,000 more students were able to take and pass the harder courses than the year before. (Maria Newman, "Cortines Says Gains Found in Prep Plan," New York Times, May 9, 1995.)

3. Students can do more challenging work than is now expected of them in many American schools. Data from the Second International Mathematics Study show that the performance of the top 5 percent of US students is matched by the top 50 percent of students in Japan. Our very best students—the top 1 percent—scored lowest of the top 1 percent in all participating countries. Standards play a major role in this result:
   - While many American 8th graders were studying arithmetic, Japanese students of the same age were taking algebra.
   - In 12th grade, most American students were taking pre-calculus while most Japanese students were studying calculus.
   - When Japanese and American students who had covered the same amount of material were compared, the Japanese advantage in calculus declined and the advantage disappeared in algebra.
4. Some people worry that higher standards will hurt minority and low-achieving students. But there is evidence that higher standards help, not hurt, these students.
   - In a review of national surveys of high school coursetaking and studies of student transcripts from 1928 to 1990 ("High Standards for All?" American Educator, Vol. 18, No. 2, Summer, 1994, pp. 4–9, 40–42), Jeffrey Mirel and David Angus found that in 1982, only 28 percent of African Americans and 25 percent of Hispanics were taking four years of English, three years of social studies, and two years of science. By 1990, the percentages had risen to 72 percent and 70 percent respectively. During this same period, the dropout rate for African American students fell from 18 to 13 ercent, and the rate for Hispanics remained unchanged at about 32 percent.

- Mirel and Angus also found that during the 1970s and 1980s, SAT scores for African American and Hispanic students rose significantly, especially among students who took the most advanced academic courses. Between 1976 and 1993, African American students scores on the verbal SAT rose 21 points and on the math section, 34 points. Mexican American students scores rose 21 points on verbal and 18 points on math. And Puerto Rican students scores rose by three and eight points respectively.
- NAEP scores for the lowest-performing 17-year-olds increased by 11 points in math and 12 points in science between 1982 and 1992, and dropout rates for 10–12th grade students fell by 5 percentage points from 1980–1990. (US Department of Education, "High School Students Ten Years after A Nation at Risk," May, 1995)

5. According to the 1993 National Education Goals Report, more American students are taking Advanced Placement (AP) exams, which are among the most demanding tests given in American schools, and the increases have been the greatest among minority students.
    - Between 1986 and 1993, the number of AP exams taken in English, math, science, and history increased by 80 percent. The number of exams in foreign languages more than doubled, and those in fine arts nearly tripled.
    - During that same period, the number of African American and Hispanic students taking the exams nearly tripled.
    - Scores usually fall when larger numbers of students take exams. But in 1993, nearly two-thirds of the AP exams taken in English, math, science and history and about three-fourths of the foreign language exams received a grade of 3 or above—high enough to earn college credit for students.
    - Beginning with the 1985–96 school year, South Carolina required all public high schools in the state to offer at least one AP class, with the state paying the fees for the course. As a result, the number of South Carolina students taking AP exams has more than quad-rupled since 1984, and the total number of exams taken has more than tripled. (Source: Advanced Placement Testing Program, Educational Testing Service, Princeton, NJ)

6. Areas that have curriculum-based examination systems—one form of standards—show higher levels of student achievement.
    - New York is the only state with a curriculum-based examination system, the Regents exams, for most high school graduates. When family income, parents education levels, race, and gender are controlled for, New York has the highest average SAT scores of any state (among the 38 states with enough test-takers to control for these factors). (Amy Graham and Thomas Husted. "Understanding State Variation in SAT Scores." Economics of Education, Vol. 12, No. 3, 197–202.)
    - When social class background is controlled, 13-year-olds in Canadian provinces with curriculum-based examinations score significantly higher in math and science (about four-fifths of a grade level equivalent in math; two-thirds of a grade

in science) than their peers in provinces that don't have such exams. (John Bishop, "The Impact of Curriculum-Based Examinations on Learning in Canadian Secondary Schools," Working Paper #94-30, Center for Advanced Human Resource Studies, Cornell University, 1994)

High standards in action in an inner-city school

Students at Baltimore's K–8 Barclay School have poverty rates higher than the district average (82 percent qualify for lunch assistance; 94 percent are minority), but they've shown astonishing achievement gains in recent years, since the school adopted the Calvert curriculum. The Calvert curriculum is nearly 100 years old, developed by the private Calvert School in Baltimore as a home-study curriculum. It is a highly structured, traditional curriculum with rich content, and it focuses on core academic subjects and stresses "error-free" student work. The Barclay School adopted the Calvert curriculum when achievement and morale at the school were at rock-bottom. Test scores, attendance rates, student conduct all reflected a school in trouble.

A recent evaluation of the Barclay School shows how far the school has come during its first four years of the Calvert curriculum:

- Reading scores on the Comprehensive Test of Basic Skills (CTBS) have jumped 30 to 50 points, since the curriculum was adopted and have remained consistently at or above the 50th percentile.
- Language arts and writing scores, which previously were consistently below the 30th percentile, have more than doubled.
- Barclay students also do exceptionally well on exams developed for private school students. One such assessment shows Barclay 4th-graders reading better than 68 percent of the national sample, composed mainly of students from affluent or middle-income homes.
- Attendance rates at Barclay have gone up, as have the number of students qualifying for the districts gifted and talented program. And the number of students diagnosed as needing special education services has dropped by three-quarters.

The Calvert curriculum is slowly spreading in Baltimore. The Carter G. Woodson Elementary School recently began implementing the curriculum, and early results are promising: Scores on the CTBS for 1st-graders, the first group taught with the new curriculum, have jumped 20 percent. High standards work!

The Education Leaders Council (Spring 1996)

(http://www.edreform.com/elc/spring96/standard.htm)

Setting Standards: No Need to Wait

"Are you listening?" Even the best of students remembers this reprimand. However, while good students quickly learn that listening is essential to success, education policymakers often seem to forget, or miss this lesson altogether. The development of academic standards is one subject in which policymakers need to "be quiet and face forward." As would-be standard setters try to uncover exactly where consensus on the need for standards turned to controversy about their content, the public, at the head of the class, once again has offered its direction.

The Public Agenda Foundation, a Manhattan policy research organization, recently amplified public expectations of the standards movement in its survey, "Assignment Incomplete." The survey revealed what many in the standards movement have been searching for in vain: consensus. It reminds us that the desire for high standards in the basic subjects is universal, one the public has stressed for twenty years. Over 90% of respondents consider standards to be the major priority facing schools; it is best described as common sense. The public views rigorous, academic standards as the starting point for schools, something that should have been a foregone conclusion long ago. Blessed with such a consensus among parents and educators (71% of American Federation of Teachers members felt US students are held to lower academic standards than those in Europe and Japan; 51% felt standards were too low in their own school), it's difficult to understand why many believe the movement has lost momentum.

In fact, fears of the demise of the standards movement are unfounded. No one involved questions the need. Rather, the problem has been one of definition. Long ago, states set about the task of devising content and performance standards. Unfortunately, many states worried too much about whether students might fail by virtue of having higher standards, and not enough about whether they might succeed because of them. In most cases the process became sidetracked by trying to be everything to everyone, with opposition dismissed as a lack of consensus or a public disdain for standards. On the contrary, it was, and is, an opposition to bad standards that has stifled the efforts of the last few years, not a rejection of standards outright. Only an observer distracted by his own agenda-one who's not listening-could think otherwise. The Public Agenda survey not only emphasizes the public's commonsensical support for standards, but provides concrete insight to how policymakers should structure the content of those standards.

Unfortunately, today's coverage of the movement often rehashes its pitfalls rather than encourages its strengths. While some organizations get bogged down trying to reconcile disparate and controversial national standard documents, others at the state level refuse to wait and their efforts deserve attention. Of course, most hope the national efforts produce meaningful resources, but the frustrations of the national process provide an instrumental lesson for state policymakers embroiled in their own effort.

While inconsistencies among the various subject efforts (in everything from terminology, format, definition, and length) challenge those utilizing them, the erratic federally-funded efforts do offer an opportunity to confirm where consensus lies. Drafters of the contentious history standards, for example, ignored pleas by initial sponsors for brevity and ventured into interpretations of how content might be taught. Disregarding the warnings that detailing curricula would be viewed as an intrusion into local control of education, they selected "appropriate" teaching activities, which were in turn quickly criticized. Other groups, such as those drafting the civics standards, excluded teaching advice and instead provided a technical document, designed for local officials engaged in planning frameworks. This streamlined effort was well-received and appreciative states, such as Colorado, have already incorporated portions of the civics standards into their efforts.

The lesson for those who listen is clear. States neither need nor want lesson plans. Rather, they would appreciate world class content guides for their curriculum developers: local teachers and local officials. Neither the national debate nor any state selection process is the last word. The demand for high standards arose from local communities, and the final decisions on how those standards will be reached resides with those same communities. Recent recommendations to revise the history documents by completely removing the controversial teaching suggestions confirm the sanctity of local control.

Still, many states falter. Consider the thousands of hours logged and millions of dollars spent nationwide. In fact, no less than 45 states were already working to define their content in detail before any national momentum, and its ensuing controversy, ever arose. However, most are still working on it, paying the additional price of having graduated several classes of seniors between the time they began and now.

Consider Pennsylvania's struggles. Its initial standards met with a storm of protest from parents in early 1992, after it was revealed that only a portion of the 600 "outcomes" dealt with academic basics. As a result, the State Board chose to enact a more modest version in 1993. Pennsylvania policymakers are still crafting "model content standards" to define the knowledge not specified in the original outcomes; yet, recent drafts seem to misstep in the same direction. The Social Studies and Science documents in particular fail to demonstrate an awareness by planners that parents will not accept non-academic "outcomes" in place of real standards.

The fundamental difference between the earlier "outcome-based education" and successful content standards is an example of the frustration expressed in the Public Agenda survey. The OBE product is not in demand. Vague, unmeasurable outcomes that gauge affective skills in non-traditional academic disciplines are unacceptable. Concise, assessable standards that measure cognitive skills in the basics are. Those who argue that the public does not understand such distinctions fail to realize that it was the public who made those distinctions in the first place. Pennsylvania's new leadership has launched an effort to respond to real demands by demanding a better version.

Thankfully, an emerging group of successful state efforts and collaborative projects prove that some leaders are listening to the people in their communities. Their success is due, in part, to viable options that already exist. In fact, substantial progress toward reaching the public's expectations is already at hand.

Recently, the Virginia Board of Education approved its "Standards of Learning," adding an excellent resource to the standards movement. After healthy debate within communities, young Virginians can now look forward to being held to high, concise expectations and to a new assessment system emerging from these standards. The academic content standards are specific enough to provide guidance to teachers, yet crisp enough to leave local pedagogical decisions out of the policy arena. The document's introduction underscores its priorities: "(The standards) provide greater accountability on the part of public schools and give the local school boards the autonomy and flexibility they need to offer programs that best meet the educational needs of students." Providing more than just hope, some policymakers are finally familiar with the public's agenda.

Confronted by failing test scores in its core subjects, like so many other states, California may also prove to be one of the better listeners in a class of 50. A short-lived affair with "innovations" in reading instruction has been recently replaced with calls for balancing the fundamentals of phonics with the literary emphasis of whole language. A legislative proclamation and two state taskforces assigned to reading and mathematics have finally responded to the public's demands. Emphasizing that the state has strayed "too far away from direct skills instruction," the task force waits to see how well the message will resonate.

With concerns similar to those aired in Pennsylvania, Californians rejected last year's assessment system. After a revised program was approved in October, the standards process continues. A 21-member commission awaits the recommendations of state subject taskforces, while the State Board of Education stands ready to evaluate all efforts. The higher education community in California has also raised its bar, in the form of incentives. California State University is considering the elimination of its remedial education, sending a clear message: K–12 education must provide the basics because the university will not provide the excuses, nor the money to pay for instruction that should have been delivered at the elementary and high school levels.

While states rediscover where consensus lies, independent or district level efforts to define standards have also blossomed. Over two years ago, a group of individual schools and districts became "Modern Red Schoolhouses." Throughout diverse communities, parents, teachers, administrators, civic leaders, and national subject specialists have struck an appropriate balance in one of the most vexing area of standards: that which exists between content and performance. Within this "schoolhouse," all children face high standards, yet program flexibility dictates that they will learn at different paces and in different ways. Standards are anchored in the fundamentals, while still preparing students for the 21st century. In the delicate effort to define rigorous yet brief, understandable yet assessable standards, many successful previous works materialize in the Modern Red Schoolhouse effort. Drafters used both Advanced Placement Test content and National Assessment of Educational Progress Curriculum Guidelines to increase exponentially the reach of their expertise.

Similarly, the Charlotte, North Carolina school district's achievement levels reached all-time highs after academic standards were set and curricula revamped to reflect the new demands. After two years of input from residents, the standards were approved in 1993 and quickly generated measurable achievement gains for minority groups in particular. Buoyed by such success, states like Arizona and Florida, and districts such as Beaufort, South Carolina, have looked closely at Virginia, at local success stories, and at the bevy of work done for NAEP, AP, and the International Baccalaureate programs in order to chart their own courses for success.

Driven by consensus and common sense, state officers and lawmakers are listening as the public's voice reverberates throughout the education community, and models for states that choose to listen to the clamor already exist. Experience dictates implementing standards need not take an infinite number of years nor dollars. It does require the willingness of motivated policymakers to take into account only those concerns that address the fundamental desire of our communities: that every child reach his or her highest potential. For policymakers who can do that, high academic standards will emerge as controversy and confusion necessarily subside.

The U.S. News School Standards Poll

(http://www.usnews.com/usnews/NEWS/STANPOLL.HTML)

Most Americans Say That School Standards Should Be Higher Than They Currently Are, A New U.S. News Poll Reports

According to a new U.S.News & World Report poll on school standards, three quarters of adult Americans think achievement standards in public schools should be higher than they are, in part because a strong majority of Americans feel school systems around the nation aren't doing a good job of educating kids. In all, 62 percent of Americans think that the education children receive in public schools is fair, poor or very poor.

Almost nine in ten people—87 percent—think that kids should not be allowed to graduate from high school without passing academic examinations and 58 percent believe employers should screen potential job applicants based on their exams and school grades, according to the poll.

When it comes to the standards themselves, though, Americans are split about what they want. There is a surprising bias away from local authorities—51 percent say that either national authorities or state authorities should set standards and 39 percent say it should be left to local authorities.

Moreover, Americans love their extracurricular activities. Some 59 percent say that sports and music and other extracurricular programs deserve the emphasis and resources they now receive, while 35 percent say some of the money devoted to extracurricular programs should be diverted into academic programs.

When the issue is how to treat gifted and talented students, Americans are also deeply divided. Some 46 percent say gifted students should be taught in separate classrooms, while 44 percent think they should be taught in classrooms with other children.

Overall, Americans think parents are most often to blame for the most serious problems in education. Asked which is the most serious problem for public education in the nation today, 34 percent said parents who are not involved in their kids' education; 22 percent said a lack of discipline in the schools; 13 percent said lack of funding for education and 5 percent said low academic standards.

The U.S. News poll of 1,000 adults over the age of 18 was conducted by Ed Goeas of the Tarrance Group and Celinda Lake of Lake Research, March 16–18, 1996, throughout the United States. The margin of error is plus or minus 3.1 percent.

The poll is part of a special *U.S.News & World Report* cover-package (on newsstands Monday, March 25) on school standards and the challenges their proponents face. The package includes U.S. News's highlights of the best ideas about standards that experts think children should know at the end of 4th grade, 8th grade and 12th grade.

Specific poll results follow:

1. How would you rate the education that children receive in your local public school system today? Would you say it is excellent, good, fair, poor or very poor.

	Percent:
Excellent	9
Good	35
Fair	28
Poor	11
Very poor	6
Unsure	10

2. How would you rate the education that children receive in public schools in the United States today? Would you say it is—excellent, good, fair, poor or very poor?

	Percent:
Excellent	3
Good	28
Fair	35
Poor	19
Very poor	8
Unsure	7

3. Do you think that academic standards for students should be made higher, lower or stay about the same as they are now.

	Percent:
Higher/much	33
Higher/somewhat	42
About the same	21
Lower/somewhat	1
Lower/much	*
Unsure	4

4. If new standards of academic performance for students were to be set, who should set them—national, state or local education authorities?

	Percent:
National	24
State	27
Local	39
Combination	4
Unsure	5

5. Which do you consider to be the most serious problem for public education in the United States today—(ROTATE)—

   – parents who are not involved in their children's education,-academic performance standards that are too low,-lack of funding for education, OR-lack of discipline in the schools?

	Percent:
Parents	34
Standards	5
Funding	13

Discipline	22
Combination	24
Other	1
Unsure	1

Thinking about some different standards that some people have proposed—Please listen as I read each one and tell me if you favor or oppose setting that standard. (READ and ROTATE)

6. Having students pass an academic examination in order to graduate from high school. (PROMPT: DO YOU FAVOR OR OPPOSE THIS?)

	Percent:
Favor/strongly	67
Favor	20
Unsure	3
Oppose	6
Oppose/strongly	5

7. Employers screening potential job applicants based on results of academic examinations and school grades.

	Percent:
Favor/strongly	26
Favor	32
Unsure	8
Oppose	20
Oppose/strongly	14

Now I'd like to read you two viewpoints. Please tell me which one comes closest to your own. (READ and ROTATE ALTERNATIVES)

Some people say that public schools should put less emphasis and resources into extracurricular activities, such as sports and music, and more emphasis and resources into academic programs.

Other people say that extracurricular activities, such as sports and music, are an important part of a well-rounded education and generally deserve the emphasis and resources they now receive.

8. Which viewpoint comes closest to your own?

	Percent:
More for academic	35
Extracurricular important	59
Both equally	5
Unsure	2

9. Should "gifted and talented" students be taught in seperate classrooms, or should they be taught in a classroom with other children?

	Percent:
Separate	46
Same as other children	44
Unsure	10

Opposition: Mathematically Correct

(http://ourworld.compuserve.com/homepages/mathman/)

Do You Know What Has Happened to Mathematics Education?

This is an introduction to issues that have been raised concerning changes to mathematics education in the public schools in San Diego and other areas of California.

In San Diego middle schools, the school district is implementing a math program called CPM (*College Preparatory Mathematics* [sic]). It is a part of a so-called **Reform** in math education being introduced from kindergarten to high school.

In practice, as implemented in San Diego and elsewhere, this approach:

- Reduces the material that students are expected to learn ("dumbs-down math")
- Virtually eliminates the teacher role as an information provider.
- Demands a very large time commitment to writing about math at the expense of doing math.
- Demands group work and group grades, and restricts questions of the teacher from individuals.
- Reduces knowledge and accuracy in the parts of math that actually do get done.
- Greatly reduces practice and drills as educational tools so basic skills don't become automatic.
- Promotes dependence on the use of calculators, and basic arithmetic suffers as a result.
- Has been reported by teachers to produce inferior results (see an example).
- Leaves students poorly prepared for later science and math courses.

CPM is just one example of the Whole Math that is coming to our schools. In spite of the fact that educators and school districts are recommending these changes to mathematics instruction, this new approach is meeting with opposition as parents become aware of what is happening to their children. Middle school and high school math is vitally important to subsequent mathematics and science education and to careers in today's society. These changes even affect elementary school children.

There is a very real possibility that our children will suffer due to the implementation of these unverified curriculum designs.

See What is Changing in Math Ed? for a description of these changes.See *The Schools We Need & Why We Don't Have Them* to find out why these changes are being forced upon students.

Where Did this Fuzzy Math Come From?
(Made from the greatest fluff on earth!)

The National Council of Teachers of Mathematics (NCTM) released the first of a series of Standards containing much of the philosophy behind the Whole Math movement in 1989. These documents do not provide content standards as the name might suggest. Instead, the Standards promote their theories of how math should be taught.

Professor Frank Allen, past President of NCTM, has provided Mathematically Correct with a Critique of NCTM Standards.

HOLD, a group in Palo Alto, has provided Suggestions on NCTM Standards Revision. In 1992, the California State Department of Education released the *Mathematics Framework for California Public Schools,* based largely on the NCTM documents. The state *Framework* stimulated book publishers to come up with new textbooks in an attempt to capture part of the large California market. In 1994, the state adopted textbooks in math, most of which were newly designed to fit the framework. Parents are taking issue with the positions taken in the *Framework,* and especially with the way these methods are implemented in the CPM and other textbooks already in use in San Diego and other areas.

Dr. Wayne Bishop, of CSULA, provides a well-reasoned critique of the 1992 *Framework.*

In March of 1995, State Superintendent Delaine Eastin announced that she was forming two task forces, one in math and one in reading, to examine state policy and the Frameworks.

The math task force fell short of asking for a revision of the math *Framework,* but made strong recommendations for a renewed emphasis on basic skills and assessment. In September, Delaine Eastin announced that she would ask the State Board of Education to work on a supplement to the math *Framework.*

However, merely adding a supplement to the existing *Framework* is not sufficient to remedy the problem. This position was well argued by the only mathematician to ever serve on the State Board of Education, **Dr. Henry L. Alder**, in his Presentation to the State Board of Education of December 7, 1995.

Public hearings on all of the Frameworks ran from December 1995 to April of 1996. A special State Assembly Hearing on Math Education was held March 14th, 1996. On March 18th, 1996, Superintendent Eastin and State Board President Larsen announced plans to begin a revision of the state framework immediately and that work to revise textbook adoption criteria was underway.

On September 12th, 1996, the State Board of Education approved a Mathematics Program Advisory that stresses balance in the content and methods of mathematics instruction and restores an emphasis on basic skills, computation, and rigor. The advisory is for distribution to all districts in the state.

On November 8th, 1996, the State Board of Education appointed a new Curriculum Framework and Criteria Committee to come up with a new Mathematics framework. This committee will begin meetings in January, 1997.

But . . .

California is still under the thumb of the 1992 Framework.

- Districts have now adopted texts based on this framework to use for the next seven years.
- Perhaps as much as $200 Million has been spent on fuzzy math in California.
- The *Framework* will still be in force during the supplemental adoptions next year.
- A *Framework* revision takes time and requires Board approval.
- Even if the *Framework* improves, there is a statutory 30-month delay provided for the publishers to catch up before texts are submitted for review.
- These steps are followed by state and local review and adoption processes.

We will be well into the 21st century before real change can possibly be implemented based on a *Framework* revision. Worse yet, there is still a great resistance to reversing this direction from those who put us in this position in the first place.

Where has this happened?

These substantial changes to math education are spreading to throughout California:

- **San Diego:** The CPM math began being introduced at the middle school level in the 93–94 school year, and the district intends for CPM or similar programs to replace the traditional math at middle and high schools. More new programs are planned for next year. Parents react, thus the birth of Mathematically Correct.
- **Escondido:** The IMP version of Fuzzy Math was introduced, but resulted in a back-lash from parents. Their district planned both IMP and CPM for next year, but parents have petitioned the school board, and we've heard that an Escondido school dropped CPM. For more information see the Update on Math in Escondido
- **Palo Alto:** The introduction of CPM Fuzzy Math was followed by a striking dive in test scores and stimulated quite a battle between Palo Alto parents and the school district. So far the parents are still losing the war.
- **Torrance:** The introduction of Whole Math was met with considerable resistance from parents in Torrance. They collected about 1,000 parent signatures and were able to get traditional math back at the high school level.
- **San Francisco:** The opposition to the Fuzzy Math is well represented by Debra J. Saunders of the San Francisco Chronicle.
- Check for **Your City** in our City List

The reaction to the introduction of Fuzzy Math in Palo Alto is well documented by a group called HOLD, Honest Open Logical Debate (http://www.rahul.net/dehnbase/hold/) on math reform. HOLD sprang up as a result of parents concern over issues that mirror those arising in San Diego today. Please visit their web site for complete information.

Briefly, CPM fuzzy math was introduced in the schools there. Many parents found this approach inadequate. A group of concerned parents formed and local debate became heated. The HOLD group has sent a wake-up call to their district administrators, but the situation there is far from resolved.

HOLD provides some important evidence. In particular, their news release about math test scores shows that **Overall scores dropped from 91st percentile to 81st percentile. Computation scores dropped from 86th percentile to 58th percentile.** This is a huge decline. The CPM organization says that the kids were tired.

Another important document at HOLD is "The need for choice", a letter to the editor of the Palo Alto Weekly by Bill Evers, 17 May 1995. This letter reviews the results of a poll taken by their school district. Among other facts, he notes that **63% of families of middle school students rely on outside math tutoring.** Their group has calculated that **$1 million a year is being spent on professional math tutoring in their district.** These efforts, along with supplementation by teachers, has helped bring test scores part way back.

Egal Forum

(http://www.eagleforum.org/educate/1996/june96/english.html)

English Standards Provoke Criticism

After four years, the National Council of Teachers of English (NCTE) and the International Reading Association (IRA) have produced a volume called *Standards for the English Language Arts.* The 132-page document has been hailed by the professionals as representing "the best thinking and experience of thousands of English language-arts teachers across the country," but it apparently has pleased almost no one.

With a title like *Standards for the English Language Arts,* one would expect to find, well, standards. At the outset, the authors glowingly report that their work produced 12 content standards, defined as "statements that define what students should know and be able to do in the English language arts."

However, the standards turn out to be only a set of vague recommendations. In the introduction, Miles Myers of the NCTE and Alan E. Farstrup of the IRA state that "a guiding belief has been that the process of defining standards must be an open, inclusive one."

The NCTE and the IRA, which together represent 200,000 language-arts educators, solicited input from diverse contributors with "different voices, interests, and concerns" and assert that "no single publication, no single set of standards, can satisfy all interests and concerns."

According to the *New York Times,* the authors "quickly vanished into a fog of euphemism and evasion," using phrases such as "writing process elements," "a variety of literacy communities," and "word identification strategies."

Unlike the standards set in other subjects, this language-arts document fails to define what students ought to know at various grade levels. Each of the 12 standards conspicuously lacks prescriptive words such as "expected," "ought," or "should." The NCTE and the IRA both view language arts as process rather than content, so they believe benchmarks are superfluous. "It would be presumptuous in the least to tell any one group what they should be working at," says NCTE Vice President Sheridan Blau.

None of the 12 standards directs educators to teach phonics, spelling, grammar, or punctuation, or provides any suggestions for reading lists. The International Reading Association has been known as an anti-phonics force.

Despite shortcomings, the writers "fervently hope that this work captures the essential goals of the English language arts instruction at the turn of the century in the United States of America." According to NCTE President Beverly Ann Chin, "Recognizing the widespread use of computers, film and video in modem society, the standards also require students to be active, critical users of technology." The assumption seems to be that, as long as schoolchildren know how to cruise the Internet and send e-mail, who needs to diagram sentences?

The impetus for the standards set in 13 disciplines, including the arts, mathematics, and science, was the 1989 governor's summit in Charlottesville, VA. Despite an enormous commitment of time and federal money, the standards have so far had no discernable impact upon student learning.

The ambiguity of the English language arts standards drew fire from the Department of Education, which initially gave the project $1 million. It stopped further funding in March 1994, citing the document's vagueness as the reason. "Unfortunately, they are very vague," said Michael Cohen, senior advisor to Secretary of Education Richard W. Riley. "They don't communicate clearly to the teachers or provide any suggestion to parents about what students ought to learn." He stated that the new "standards" are not "what people are looking for when they're looking for standards."

The NCTE and IRA continued the project, using $1 million of their own funds.

Definitions Chart New Course

The authors take care to define the terms used in *Standards*. "Text" includes printed texts, spoken language, graphics, and technological communications. "Language" includes visual communication, as well as spoken and written expression. "Reading" encompasses listening and viewing in addition to decoding printed words.

Terms with generally agreed-upon meaning are not safe in this document. "Standard English" is redefined as "the language of wider communication" that "is spoken and written by those groups with social, economic and political power in the United States."

The authors add a new twist to the traditional definition of literacy: "Being literate in contemporary society means being active, critical, and creative users not only of print and spoken language but also of the visual language of film and television, commercial and political advertising, photography, and more. Teaching students how to interpret and create visual texts such as illustrations, charts, graphs, electronic displays, photographs, film, and video is another essential component of the English language arts curriculum." One gets the impression that knowing how to read is only a minor part of literacy.

Full Speed Ahead for Diversity

Standards reveals a philosophy that supports non-conventional spelling, bilingual education, non-traditional English use, and multiculturalism. Goal 9 addresses "diversity in language use" and, in so doing, reveals a tired concentration on differences among students. Students should "explore the linguistic diversity among their peers [to] discover that language use, dialect, and accent are cues for other kinds of differences."

The experts assure us that, although English is "the language of wider communication," "this does not imply that other varieties of English are somehow incorrect or invalid; rather it means that all students need to have standard English in their repertoire of language forms, and to know when they should use it."

In the same vein, the authors stress the "need to honor that which is distinctive in the many groups that make up our nation," i.e., multiculturalism. "Students who have difficulty relating to peers from different cultures may find it easier to understand their classmates' unfamiliar backgrounds and experiences—and may discover unexpected similarities—when they read and discuss stories and other texts that dramatize cultural frameworks and relationships."

Standards also makes a pitch for more bilingual-education programs. The experts declare, "Students whose first language is not English are more likely to achieve academic success in English in settings where their primary language is nurtured. . . .

The development of competency in English is most effective when students are in programs that build on their first language. . . . Whenever possible, then, students whose first language is not English should learn and study content in their first language while learning English as a second language."

Claremont Institute

(http://www.claremont.org/index2.htm)

The Decline Of Academic Standards In California Education

The Story Behind the Student Testing Fiasco

> *If it is indeed true that "learning is living," then the school loses its institutional-its properly artificial-character, and soon people forget that learning requires attention and assiduity. They end by repudiating the school and entrust to some sort of pseudo-schooling, some "life-like" contrivance, the task of teaching. . . .*
>
> —Jacques Barzun, *The House of Intellect* (1959)

> *stand-ard (stan-derd), n. 1: an object considered by an authority or by general consent as a basis of comparison; an approved model. 2: anything, as a rule or principle, that is used as a basis for judgment. 3: an average or normal requirement, quality, quantity, level, grade, etc.*
>
> —*Webster's New Universal Unabridged Dictionary* (1983)

Introduction

American parents, politicians, and business leaders are concerned about the quality of American education. Everyone agrees that the system is broken. And although there are dozens of ideas for reforming the schools, no idea is more widely accepted than the need for higher standards. Other reform ideas—such as voucher programs, charter schools, or increasing per pupil expenditures—have vociferous advocates but lack the widespread support needed to change public education on a systemic basis.

Almost all Americans agree that the schools do not set their sights high enough. Raising standards is considered one of the best ways to improve the schools and students without radical restructuring. It is thus useful to look at recent reform efforts which have focused on standards. By doing so, we can evaluate the potential of current efforts and better understand what is at stake. The essential question that must be addressed is: Would schools be improved by raising standards in the present system, or is more fundamental overhaul needed? No state offers a better example of both the promise and pitfalls of standards reform than California.

The Honig Years

California in the early 1980s was widely regarded as a trailblazer on the path to education reform. It had a massive publicity campaign detailing the ideas to be implemented. It had a highly regarded leader in Superintendent of Public Instruction Bill Honig, first elected in 1982. It had one of the nation's largest teachers' unions and a state school system attentive to the latest ideas of reform.

Honig ran and was first elected on a "back to basics" platform, which the public saw as the needed corrective after the explosive growth of school spending under Wilson Riles. During the first years of his watch, schools refocused on skills instruction, such as grammar, spelling, addition, and subtraction, and it paid off. From 1983 to 1987, elementary school pupils showed slow but steady improvement on the California Assessment Program (CAP) exam, though the increases were not consistent across the board and students continued to score well below the national average on the National Assessment of Education Progress (NAEP) and the Scholastic Achievement Test (SAT). In all, however, there was reason for guarded optimism.

What happened? Like the Greek tragedies studied in the early days of American education, the mighty Golden State's small successes soon gave way to a punishing hubris. State education officials shifted their focus away from basic skills and began to put more emphasis on ideas popular at teachers' colleges and among progressive education theorists. So from a primary focus on tried-and-true methods of basic education, the system lurched toward a more radical agenda. There were numerous reasons for the change.

Honig and the State Department of Education decided in 1987 that California's standards were not being applied "equitably." Some students, mostly in middle to upper middle class areas, were performing better than students in poorer areas. In such areas, active parents began to challenge school districts to deliver on the new basics education and the result was a system where students in some districts saw accelerated learning. But in areas where parents were less involved and districts less challenged, scores continued to slide.

Honig and others also became concerned that higher standards and greater discipline would frustrate and hurt the self esteem of many students. He claimed that kindergartners were being pushed too hard to learn how to read, write, add, and subtract. Instead of learning to read, Honig said, children ages four, five, and six should be spending their days listening to stories, acting out plays, counting with beans, growing plants in the windows and building with blocks.

Enter Stage Right: "Outcome-Based Education"

Thus in 1987, the four years of California's modest attempts at reform ended and a new, more ambitious endeavor was launched. New frameworks began to focus on "higher-order thinking skills," so-called "learning to learn" skills, and other abstract education theories. Skills-based learning was pushed aside for a performance, or "outcome-based" curriculum.

Hailed at the time as cutting edge and widely endorsed by business leaders, the new state standards led to a swift reversal in the gains of the previous four years. From 1988 to 1994, statewide SAT scores stagnated. Some districts did worse than others. From 1990 to 1994, for example, the Los Angeles Unified School District's verbal average fell 13 points, and its math average declined by 16 points. To take one year, the district's average in 1992 was 789—more than 100 points below the national average of 899 and the statewide average of 900. That was down from 797 in 1991; 806 in 1990; and 817 in 1989. On the verbal portion of the test, Los Angeles students averaged 357 points-down from 361 in 1991; 366 in 1990; and 372 in 1989. On the math portion, students averaged 432 points—down from 436 in 1991; 440 in 1990; and 445 in 1989.

These numbers were not lost on the business world that would be hiring the next generation of Golden State graduates. According to a 1992 survey by the Council on California Competitiveness, 63 percent of California employers said recent high school graduates applying for entry level jobs "lack a satisfactory education."

The CLAS Is Out

By spring 1995, after eight years of experimenting with these progressive education techniques, California's education officials could no longer make excuses for students' poor performance. Tests at both the national and state levels indicated a tragic debacle. In March, the results of the defunct California Learning Assessment System test showed that a majority of the state's fourth, eighth, and tenth graders were below acceptable levels in reading, writing and math. When the National Assessment of Education Progress reported a month later that California's fourth graders tied for last with Louisiana in reading proficiency, it was clear that the reforms of the last decade had failed. Newly elected State Superintendent of Public Instruction Delaine Eastin called the results "depressing" and pointed out what many California parents had known, or at least suspected, for a long time: "Our students are not learning to read well enough."[1]

The fact that she had presided over these years of failed experimentation from post as chairman of the Assembly Education Committee makes her admission all the more dramatic. "We are not here to make excuses," Eastin said. "The bottom line is something is wrong. The kids' basic skills are not what they should be."[2] It was a stunning admission that shocked the national education establishment. It came from a woman who had either written or supported much of the legislation that compelled the schools to turn their back on skills instruction in the first place.

The state went on red alert—again. In the wake of the bad news, Eastin formed the California Reading Task Force, a 24 member panel of education experts, teachers, parents, and community members, to assess the present methods of reading instruction and suggest improvements.

The task force issued its recommendations in September. Entitled, "Every Child A Reader," the task force's report was in large measure a repudiation of the state's eight year experiment with "Whole Language," one of the major reforms implemented as part of the revised 1987 frameworks. Considered one of the most dynamic ideas in education, whole language teaches reading by teaching students to identify words by sight, rather than sounding out words using the traditional phonics method.

Though the task force did not recommend abolishing whole language entirely, its report made important concessions to traditionalists. Among other things, "Every Child A Reader" called for a "balanced approach" in reading instruction, combining the "literature based" technique of whole language with skills development and tried-and-true, intensive systematic phonics.

Even Bill Honig, the fallen champion of school reform, admitted to the news media that maybe he had pushed too far—that maybe the state shouldn't have eliminated skills instruction after all.[3]

The revelations from CLAS and NAEP are only the latest numbers indicating that California's students are wallowing in the education mire, if not sinking. They are even more significant in light of what was already known when the Golden State began to reform itself. Twelve years earlier, the National Commission on Excellence in Education's landmark report, "A Nation At Risk," identified a "rising tide of mediocrity" in the schools and launched a series of reforms supposed to put public education right back on track. There was no longer any question that the establishment didn't know that something was wrong.

Rediscovering Standards, Again

In the wake of these revelations, new ideas took shape. "Standards" became the battle cry of the eighties, as education officials, legislators, administrators, and teachers labored over how to make kids learn better. Conservative political reformers' call to raise expectations and accountability was heard. The education establishment agreed. For the first time in nearly 40 years there was a consensus about what needed to be done. Standards, however, have proved to be more problematic than once believed. The movement to raise standards gave rise to a fundamental conflict of visions that has split efforts to reform the education system. The questions became whose standards and how to implement them. Even the methods needed to measure them differed radically.

While almost everyone agrees on the end—that students should graduate from school having, among other things, mastered certain basic skills—there is fierce disagreement about the means. Much of the debate centers on "content" versus "performance" standards. Content standards refer to the skills and knowledge to be taught, while performance standards focus on the depth of mastery, often through essays, science experiments, mathematical evidence, or a combination of these activities, in each skill area.

Performance standards have garnered the most recent national attention, mainly due to their association with Outcome Based Education (OBE) curriculum and testing. The problem with OBE is that nobody fails. Getting the correct answer, students are told, is not nearly so important as how they solve the problem. And so the push for standards was ultimately hijacked in the mid 1980s by the abandonment of basic skills in favor of immeasurable, obscure "skills" such as "critical thinking" and "problem solving." Performance either remained static, with occasional upticks, or declined.

A 1993 federally-funded study showed U.S. high school students spend an average of only three hours every school day on core academic subjects. Classwork in English, math, science, history, geography, foreign languages, civics, and fine arts lags by 50 percent behind that of competitor nations. Total academic hours in a four year period in the U.S. is 1,460, compared to 3,268 in Germany and 3,170 in Japan.[4]

Thus, the last fifteen years have been a story of failed reform. After all the "back to basics" rhetoric, the revised curriculum, the new assessments, and higher expenditures, California schools were in worse shape than ever. Understanding why these efforts failed will help us map a more intelligent course to achieve the goal of higher standards and improved education for all students.

California's Long March To Reform

California has no standards, only those which are implicit within the current frameworks.

—Michael Kirst
Co-Director for Policy Analysis of California Education (PACE)

Thirty years ago, California's schools weren't that bad. There was no state-mandated curriculum or graduation requirements a generation ago, and yet California's students were at or near the top of their game. Priorities began to shift in the 1960s, as progressive ideas in education gained new currency in the education department and teachers' colleges and began filtering into schools and enshrined in law. The 1970s saw a downward slide in standardized test scores. From 1970 to 1980, California's average SAT score fell 58 points, from 957 to 899. The average verbal score fell from 464 to 425, and the average math score falling from 493 to 474.[5]

In 1982, the only requirement to graduate from high school in the state was two years of physical education.6 School districts had their own graduation requirements, but nearly half were non-academic courses, a lingering and persistent symptom of the "life education" model popular in the 1950s. Also, schools regularly assigned their students into tracks, depending on their grades and how well they performed on standardized tests. Former U.S. Assistant Secretary of Education Diane Ravitch explains that tracking tended to shortchange students, especially those students who were neither exemplary nor in need of remedial help:

> A Stanford University study released in 1984 found that high school students were assigned to four different tracks. About 10 percent were in an honors track, about 35 percent were in the college preparatory track, 10–15 percent were in a remedial track, and nearly 45 percent were in the general track. The general track students had the weakest, most incoherent curriculum, with the most non-academic electives. A sample transcript of a general track student included courses in typing, cultural awareness, homemaking, beginning restaurant management, food for singles, exploring childhood, and clothing[7]

Thus the stage was set for more than ten years of trial and error in education reform.

A Decade of Experimentation

There is a growing spirit of optimism and a can-do attitude among educators that I think bodes well for the future of the state and the future of the country.

—State Superintendent of Public Instruction Bill Honig, April 1986

In 1983, Californians looked upon their schools and despaired. That year, "A Nation At Risk" sent shockwaves through the American education establishment. California's education officials faced climbing dropout and illiteracy rates, and plummeting standardized test scores. When Bill Honig took office in January 1983, the average combined SAT score was 895. (By comparison, the national average that year was 893.[8])

A self-described former progressive turned traditionalist, Honig campaigned throughout the 1980s on the need for schools to "get back to basics." His message was the same wherever he went: Kids need more homework, better-trained teachers, more challenging textbooks, stricter discipline, and a traditional education firmly rooted in the basics. Math, science, history, and literature were not just for the college-bound.[9] He criticized the non-academic courses which dominated the various curriculums offered in over 1,000 school districts across the state, and vowed to do away with tracking. He won the 1982 election with 56 percent of the vote.

Upon his election, Honig immediately set out to centralize the curriculums. Students would no longer be able to graduate from high school with courses in home economics and food. In 1983, Honig pushed (and the legislature passed) SB 813, the California Education Reform Act, an $800 million reform package that set strict graduation requirements, and created a state-mandated curriculum that included English, history, math, science, fine arts, foreign language, health, and physical education.[10] Honig retooled the CAP test, setting the average score at 250 and challenging all schools to meet or exceed that number.

Honig took a strong stand on textbooks, arguing that most had been watered down over the last decade. With 11 percent of the total U.S. student population, California is the largest textbook buyer in the nation (with Texas a close second). When California wants a change, the textbook publishers listen. In 1985, the state rejected most junior high school science books up for consideration. In 1986, it rejected all of the math books.[11] And in 1988, the state threatened to do the same with about half of the reading, spelling, and English texts unless publishers revised them to place greater emphasis on writing and making stories more interesting.

Honig also began issuing annual report cards to chart the progress of reform. In June 1986, Honig's state report card found that after three years of the reform effort, only 47 percent of the state's 739 high schools were able to raise the reading and math scores on the CAP test high enough to meet the goals set in 1983. CAP averages rose less than one percent overall, and when compared with similar tests, California students ranked 41st percentile nationally in reading, 48th percentile in math.[12] Nationally, they have remained at or near the bottom ever since.

But Honig assured the public that reform was right on track. After three years, he could boast that for the first time since 1979, California's sixth grade students showed as much progress in the basic skills as third graders. The 1985–86 scores for third, sixth and eighth graders showed improvement in all subject areas but eighth grade history. Both third and sixth graders raised their average scores by 17 points. "There is momentum, there is direction, there is a common vision," Honig said.[13]

Also, SAT scores went up 11 points from 1982–83 to 1986–87, when California's average combined score was 906. The national average for 1986–87 was also 906. (California's 12th graders tended to score better on the math portion of the test—482 compared to 476 nationally—and lower on the verbal portion—424 compared to 430 nationally.) That year, 46.4 percent of California's high school seniors took the college entrance exam.[14] There was good reason then to believe that the reforms were working. As columnist Peter Schrag wrote after Honig released his data,

> The report recognizes the progress that's been made under the state's school reform law of 1983 and the increased funding of the past three years. But it also documents how far California—now mediocre at best by most national standards—still has to go, and how much more difficult the problems of California education are likely to become in the next few years. Student performance on academic test scores—assuming they're indicative—shows similarly mixed numbers. Scores of elementary school students are up from their lows of the 1970s. They started to rise before the reform law was passed, both in California and nationally, and before George Deukmejian and Bill Honig were elected, while high school scores, both on California's own tests and on such measures as the SAT are still lagging. In 1984–85, for example, 12th graders scored considerably higher in mathematics on the CAP test than they had five years earlier, but slightly lower in reading.[15]

Reform at a Crossroads: The "Inequity" of Standards

The conventions of spelling, handwriting, grammar, and punctuation should be taught as subskills. . . .

—California State Language Arts Frameworks

At Superintendent Honig's behest, the course of reform shifted in 1987. New curriculum "frameworks" were introduced that departed radically from the "back to basics" approach he advocated over the previous four years. Four factors contributed to the change.

First, higher standards were a victim of their own success. Policy Analysis for California Education (PACE) surveyed 17 unidentified high schools across the state and found that all exceeded the standards imposed by SB 813. As the basics appeared to improve, however, schools began tinkering with other areas of instruction which had nothing whatsoever to do with reading, writing, or math. "We found people talking about an even more complex and deeper curriculum: thinking skills, learning-to-learn skills, problem-solving skills," said USC education professor Allan Odden, a member of the PACE research team.[16] But as priorities changed, so did the definition of "basic skills." Simply teaching verb conjugation and multiplication was not enough. Schools had to teach kids how to think.

Second, even though reform was working, the improvements were not evident across the board. Honig and other educationists began to worry that reform was not progressing as well in certain areas, particularly inner cities. Honig estimated that a little more than a quarter of the state's 1,780 middle and high schools had made real progress with the 1983 reforms. About 40 percent had made some progress, but "there's another 25 percent where nothing has happened."[17] Lingering problems, Honig and other education analysts throughout the state reasoned, had to do foremost with inequities in funding and changing demographics.

Also, Honig was concerned that younger children were being overwhelmed by performance goals too early. Advocating they be read to instead, he urged schools to hold off teaching kindergarten students to read. He feared that too much attention on academics early on would alienate and possibly drive away students later and cited a study indicating that future drop-outs could be identified as early as third grade.

Finally, an increasingly performance-based curriculum generated the need for performance-based assessment. The trouble was, nobody could agree on what exactly "performance-based" meant. As priorities changed to favor "learning-to-learn" skills and the like, assessment systems had to change as well.

So, skills instruction was out, and outcome-based instruction was in. Though differing in subject, each new curriculum framework was built around four central ideas:

- An emphasis on thinking, application, and problem solving;
- High expectations for all students, instead of the tracking that had been prevalent;
- A focus on the body of knowledge and the ways of knowing in each discipline, enabling every student to build a foundation for future learning;
- A shift from coverage of minute details to emphasis on understanding the major ideas in each field.[18]

An instructional shift from minutia to the bigger picture sounded like a good idea at the time, but before long it was clear that the change in focus robbed students of the very foundation for learning that the frameworks were supposed to provide. As priorities changed, non-academic subject matter began to leak back into the curriculum. Thus, the definition of "skills" was expanded to include "critical thinking," "life skills," "conflict resolution," and a whole gaggle of special interest-mandated studies which came at the expense of the true basics.

Language Arts

Under the new frameworks, California stopped teaching English and began teaching "language arts." The new language arts framework all but abandoned basic skills instruction. Elementary grammar, punctuation, spelling, and vocabulary went by the boards: no more drills, no more workbooks, no more vocabulary tests.

But the most radical change was the way in which reading was taught. For more than thirty years, with the exception of a short period in the early seventies, California students learned to read using the "Look-Say" method, best known for the "Dick and Jane" series of readers. Look-Say was the among the first in a long line of progressive education reforms designed to make learning more interesting. The theory behind it was that kids could learn to read better by identifying words with pictures—See Dick, see Dick run, see Dick run to the Tree, and so forth. Look-Say largely replaced phonics, which teaches kids to read by sounding out words through drill and repetition. Educationists dismissed phonics as too boring. But research has indicated time and again that intensive systematic phonics is the most effective method of reading instruction, boring or not. California retained some aspects of phonetic instruction in the Look-Say curriculum.

The new language arts framework jettisoned Dick and Jane—along with what little phonetic instruction that remained-for the "literature-based" approach known as "whole language." Like its predecessor Look-Say, whole language teaches students to identify whole words rather than sound them out. The technique is based on the belief that if kids can learn to speak by being exposed to spoken words, then they can become literate by being exposed to literature.

But whole language is more than just a method of teaching kids to read. It's a philosophy of learning. As one proponent described it, whole language is "child-centered, experiential, reflective, authentic, holistic, social, collaborative, democratic, cognitive, developmental, constructivist, and challenging."[19] Phonics, whole language enthusiasts say, is "generally boring and lead[s] to a dislike of reading," "misrepresent[s] what reading is," "detract[s] from time that would be better spent in reading aloud together," and "lead[s] to unrealistic expectations for children."[20] Eighty-seven percent of reading teachers embraced whole language, according to a survey, and fewer than one in ten employed phonics.[21]

Honig and the state education department made it clear that there was not enough attention to writing under the old frameworks, largely because writing wasn't tested. As with reading, the whole language approach to writing is based on the faith that students will learn to write by immersion in writing. This method has some rather disturbing byproducts. One byproduct of whole language is "invented spelling," which is the educationist's euphemism for uncorrected misspelling. The idea is to shift "from a focus on error to a focus on creation" and to encourage students to become "natural writers." Just as reading is supposed to come naturally, through exposure to literature, "learning to spell should ultimately be as natural, unconscious, effortless, and pleasant as learning to speak."[22]

Even though Honig has since switched his position on whole language, he still finds merit in invented spelling. In fact, he believes the method can even be used effectively in phonics instruction:

> 'Invented' or 'temporary' spelling is a technique that allows students to approximate the letters and patterns of letters which represent a given sound and so permits the construction of more advanced writing connected to student interests. It is a helpful technique to encourage students to write and pays off in increased writing volume and more elaborate stories, which in turn encourage children to think about what they are writing more than traditional techniques.[23]

Couched in such technical terms, invented spelling almost sounds reasonable. Here it is in practice, as employed by a six-year old student in San Francisco: "If i wd hf mg ics I wd save the bses and one I sav the bes then I wi g thm way the end." Translation: "If I would have magic beans, I would save the beans. And when I save the beans, then I will give them away. The End." The child was writing a book report about "Jack and the Beanstalk" for his first grade class. His teacher, Michelle Chabra, told the *San Francisco Chronicle* that he was permitted, even encouraged, to write that way because it will help him become a writer in "the truest sense." "The issue is confidence," she said.[24]

Education As Therapy: The Self Esteem Task Force

Building confidence was and remains a crucial element of California's curriculum. By reinforcing the self-esteem of students, the theory goes, all other things would fall into place; students would be more interested in learning, thereby improving their performance. California, always on the forefront of education change, reacted to this new thinking with its modus operandi—it formed a task force.

The California Task Force to Promote Self-Esteem first convened in 1988. Three years and $735,000 later, the task force concluded that a positive sense of self was the cure for what ails many students, especially in the crime-ridden inner cities.

A good self-conception, the task force reported, "inoculates us against the lures of crime, violence, substance abuse, teen pregnancy, child abuse, chronic welfare dependency, and educational failure."[25]

This thinking about feelings profoundly affected the course of California education. While the public called for higher standards, standards within the education universe were corrupted by the new psychological imperative that failure was not an option because of its alienating effect on students.

Mathematics

California introduced its new mathematics frameworks in 1985. They would become a model for the national math standards introduced four years later. Similar to the language-arts model, the new curriculum was designed to teach math in a "new, dynamic way," again by moving away from basics and refocusing on "problem-solving skills."

For example, writes Charles Sykes, "a typical eighth grade student might be asked to 'Write a set of directions for a younger student, explaining how to add 2/3 and 1/3. Then use a picture and write an explanation as to why you add fractions the way you do.' The idea was to encourage children to think and communicate mathematically, a skill that was encouraged by having students write in journals and creating mathematical artwork."[26] Flash cards and multiplication tables were out. For the first time, students were permitted to use calculators.

And teachers stopped teaching. A teachers' guide for one fourth grade math text admonished instructors to step back and let students lead discussions. "Your job is . . . not to judge the rightness or wrongness of each student's answer. Let those determinations come from the class. . . . Avoid showing any verbal or nonverbal signs of approval and ask, 'Does everybody agree?'"[27]

According to Wayne Bishop, professor of mathematics at California State University, Los Angeles and a member of the State Superintendent's Math Task Force, this "new, new math" departed too far from the rudiments of math in favor of this "dynamic" approach. "There has been far too much support for curricula and instructional techniques that are perceived as being in harmony with the California Framework . . . and the NCTM [National Council of Teachers of Mathematics] Standards, given that there is almost no statistical data that has been confirmed as valid and reliable in support. In fact, considerable contrary data, such as the Oklahoma City study or the Japanese avoidance of calculator use in elementary school, is simply ignored because the results do not agree with the philosophical underpinnings of the current [math] reform movement."[28]

On the whole, impact of the frameworks has been mixed. Younger students have clearly fared worse than older students who had a chance to learn basic skills under the pre-1987 frameworks. The 1991 NAEP found that California's students ranked in the bottom third of participating states in mathematics. And, Sykes notes, "only one in 12 eighth graders was capable of working the problem" asking them to explain how to add two fractions.[29]

In 1992, NAEP reported similarly bad news in reading: their report found California's eighth graders tied for last with their classmates in Louisiana—a result that was repeated two years later, which made big news in the spring of 1995.

CLAS Dismissed

California's own assessments were a mixed bag. In 1990, the education department reported that CAP scores in reading and writing dropped for the third consecutive year for third graders, who were the first group exposed to the new language-arts frameworks. Sixth grade scores also fell. Math scores for those grades did improve, however, and eighth grade scores improved slightly across the board.[30] Yet from 1986 to 1991, the average eighth grade reading score increased 14 points to 257; math scores increased 18 points to 271; history/social science scores increased 17 points to 260; and science scores increased 19 points to 269.

Overall, the CAP scores were a mess. They were difficult to gauge due to wide disparities among the grades, and on the decline among younger students. The modest gains of 1986–87 were overshadowed by the beginning of the new decade, as more reports were released showing students' performance was slipping. So in 1991, education leaders decided that the old test was not authentic.

"Authentic" (or "performance-based") assessment is the kissing cousin of outcome-based education and a typical phrase educators use in conjunction with standards. According to conventional wisdom, multiple choice tests do not give an accurate portrait of what a student can and cannot do in a particular subject. Authentic assessment purports to do away with the pitfalls of the old multiple choice tests by making students demonstrate what they know. The technique "directly measures actual performance in a subject area," according to the National Center for Fair and Open Testing. "Standardized multiple choice tests, on the other hand, measure test-taking skills directly and everything else either indirectly or not at all." There is some truth to this, although many education experts still maintain that multiple choice tests can be "authentic" if the questions are detailed enough, and require students to perform several complex tasks.[31] Like OBE, "performance-based" assessment was decorated in conservative garb and sold as a way to hold schools and teachers accountable.

Specific authentic assessment techniques include: "written products, solutions to problems, experiments, exhibitions, performances, portfolios of work and teacher observations, checklists and inventories, and cooperative group projects. These assessments may evaluate regular classroom activity or take the form of tests or special projects."[32]

A new, performance-based test—the California Learning Assessment System, or CLAS—was developed in cooperation with Governor Wilson, Honig, and State Senator Gary Hart (D-Santa Barbara). According to Honig, the goal was to develop techniques to teach students to analyze, evaluate, understand and explain what they were learning. The new test, he said, would test "what students know, not how well they can guess." Wilson wanted numbers: "individual student scores so parents can track how their children stack up, and so teachers can be evaluated by how well their charges do."[33] The State Legislature in 1991 passed a bill sponsored by State Senator Gary Hart authorizing the creation of the new tests. CLAS was first administered in Fall 1992.

What eventually happened with the CLAS test is fairly well known, although the finer details may have been lost in the media circus that surrounded it. The 1994 controversy surrounding the CLAS test was, at bottom, a challenge to the legitimacy of outcome or performance-based assessment. What had originally been an attempt by conservative reformers to turn the focus in education from the historical measurement of inputs (i.e., spending, class time, etc.), to an objective measure of accountability (e.g., can the student find the square root of 81 or diagram a sentence?) was contorted by the educationists into a mainly political and social agenda.

CLAS, described as "manifestly unworthy" by no less than the State Auditor General, was an "outcomes-based" debacle of the highest order. Students were graded 85 percent on what they expressed, and 15 percent on how they expressed it. And it was anything but standardized. In 1994, there were about 97 versions of the test in circulation. Much of CLAS spurned traditional literature in favor of contemporary, politically-correct writing.

The press heralded CLAS as a way of making students really show what they know. Writing in the *Sacramento Bee* shortly before Governor Wilson signed the CLAS legislation in 1991, Peter Schrag gushed:

> [CLAS] would ask them to solve real problems, giving elementary school students, for example, some simple equipment—a battery, a couple of wires, a light bulb—and ask them to create a circuit that lights the bulb, then draw a diagram to show what they did. It would demand more writing. It would ask them to construct models. It would require oral solutions to certain problems. And it would lead to the creation of a 'portfolio' on each student that includes art and science projects and essays, as well as more conventional work on which each student would be evaluated.[34]

CLAS found support early on from the California Business Roundtable and other business groups as an ideal way of measuring those oft-mentioned "critical thinking" and "higher-order" skills. The Roundtable, unable to ignore the siren song of performance-based testing, did not back off its support of the "cleanup" legislation, even after being advised in mid-1994 that the CLAS test did not grade for punctuation, grammar, and spelling. Nor did the union-backed legislators (including then-Assemblyman Delaine Eastin) on the education policy committees blink during hour after hour of testimony by parents, educators, and legislators questioning the details of the test. They simply circled their wagons and voted to reauthorize the test, which was eventually vetoed by the Governor.

Just what was wrong with the CLAS test? It evaluated students more on their feeling than their analysis of a subject. It permitted students to take certain sections of the test in groups. It didn't require students to write complete sentences, much less complete paragraphs. In some cases, students could draw pictures instead of write their answers. In short, it furthered the state's policy of eschewing basic skills for so-called "problem solving" skills. Some portions of the test bore little relationship to the subjects they were supposed to be testing, or were used to push particular agendas. For example, a fourth grade science question asked: "When trash leaves your home, where do you think it goes?"[35] The literature portion of the test provoked the most controversy. It was there that the state, asking students questions relating to their personal beliefs about religion, politics, and family, stepped over the line. Examples abound:

- A fourth grade literature question presented a short biography of Civil Rights-era icon Rosa Parks and asked students to "discuss your thoughts," draw posters, and explain how the story related to their lives.[36]
- A prototype fourth grade literature section included a story about discrimination against Chinese immigrant laborers in California during the 19th century. Students were again asked to write their thoughts and feelings about the story, and to discuss their own experiences with discrimination. Another question asked what kind of problems teenagers have with their parents.[37] That particular question was fiercely denounced by parents and some civil libertarians as invasive and psychological in nature, and therefore in violation of state laws prohibiting schools from administering psychological tests without permission.
- Tenth graders were asked to read an excerpt from "Roselily," a short story by *Color*

Purple author Alice Walker about a black unmarried mother who is about to wed a Muslim man. Parents objected to a number of passages, including: "... She cannot always be a bride and a virgin, wearing robes and veil. Even now her body itches to be free of satin and voile.... She wonders what it will be like. Not to have to go to a job. Not to work in a sewing plant. Her place will be in the home, he has said, repeatedly, promising her rest she has prayed for. But now she wonders. When she has rested, what will she do? They will make babies—she thinks practically about her fine brown body, his strong black one. They will be inevitable. Her hands will be full. Full of what? Babies. She is not comforted." At one point, the groom declares that Christians believe in "the wrong God." Parents criticized the story and the accompanying questions because they "emphasized emotion, not intellect." Some parents and education critics said the story was anti-Christian and anti-clergy. In response to the public outcry, the education department removed the passage from the 1994 test.[38]

- One of the more controversial passages students were asked to analyze appeared in a story entitled, "Just Lather, That's All" on the tenth grade test. The narrator of the story is a barber with homicidal thoughts. "I could cut this throat just so—zip, zip. I wouldn't give him the time to resist, and since he has his eyes closed he wouldn't see the glistening blade or my glistening eyes. But I'm trembling like a real murderer. Out of his neck a gush of blood would spout onto the sheet, on the chair, on my hands, on the floor."[39]

For all the trendiness, the group work, the sketch drawing, the stream of consciousness writing, the pseudo-psychoanalysis—in short, the distinct lack of objective standards—students still performed poorly on the CLAS test in 1994. Statewide, 70 percent of students tested below proficiency in reading; 60 percent were below proficiency in writing; and 80 percent were below proficiency in math. Tenth graders fared among the worst: 86 percent of high school sophomores tested below proficiency in math.

The two-year experiment cost California taxpayers $28 million. Governor Wilson vetoed continued funding for CLAS in September 1994.

Barely mentioned was the quiet release in June 1995 of the final set of scores for two pilot exams in history and science given to the state's fifth graders in May 1994. The results demonstrated that students were not just poor readers and mathematicians, but substandard in science and ignorant of U.S. and California history, too. Only 34 percent of fifth graders scored three or better (out of a possible six) on the CLAS history test, and 37 percent scored three or higher on the science test.[40]

Standards For California In The 21st Century

We still have a long way to go for students to perform at world-class standards.

—Maureen DiMarco,
California Secretary of Child Development and Education, September 1991

Academic standards remain, for now, in the hands of the state school superintendent, the legislature, and gubernatorial appointees. State officials cannot shake their belief that the best answers to the problems plaguing California's schools come from the top. But if the last decade of experimenting with state-mandated standards have proven anything, it is that top-down mandates and one-size-fits-all standards rarely work. Invariably, standards become debased by politics or infected with educationist cant. And results, in the form of standardized tests, have been mixed at best. In big city school districts like Los Angeles, Oakland, and San Francisco, they've been downright disastrous.

Nineteen ninty-five may one day be seen as a watershed year for the standards movement. It was the year that state officials began to doubt the effectiveness of the state standards project, and began talking at least about making amends. The question remains whether the public policy that follows will be consistent with the rhetoric.

State education officials have been more critical of the drift away from skills instruction, indicating a possible turn of the tide. "It's a terrible thing to do to children," Wilson education advisor Maureen DiMarco said last year of the new "new math." "This should be common sense. Every time we throw out the fundamental skills we get into trouble."[41]

"Where we went wrong," former school superintendent Bill Honig confessed to the *San Francisco Chronicle,* "is that we weren't strong enough on the basic skills. We thought teachers would continue teaching the skills, but they didn't."[42]

And in the wake of the double blow from CLAS and NAEP, Superintendent of Public Instruction Delaine Eastin asked, "do we have the courage to face these results honestly and do something?"[43] But Eastin continues to tour schools across the state touting the virtues of state-mandated standards as "something we've never tried before."

Since the death of CLAS, the state Department of Education has been scrambling to find a suitable replacement. A new standardized testing bill (AB 265) passed the legislature and was signed by Governor Wilson in October. The new law basically creates two tests. Students in grades two through ten will take basic skills tests that will assess their ability to read, write, and perform basic mathematical calculations. Unlike the old CLAS test, the new skills test will grade students individually so parents can have some idea how their children are progressing.

In addition, fourth, fifth, eighth, and tenth graders will take a statewide exam that includes more in-depth questions that assess basic skills as well as students' ability to apply those skills in reading, writing, math, science and history—presumably what the CLAS test was supposed to do.

Legislators attempted to address many of the objections to the CLAS test in the new legislation. On the new exam, questions that probe into a student's personal beliefs or practices in sex, family life, morality or religion are strictly prohibited. Legislators also included an opt-out clause, so parents may choose whether or not their children take the test.[44]

The problem with the new law is that, like CLAS, it establishes a statewide assessment but fails to create standards prior to the development of the tests. Unless there is supplemental legislation which clearly removes the cart from in front of the horse, the adage "testing drives curriculum" will continue to dominate schools in the state.

Similarly, the state will continue to reform its curriculum frameworks, but the impact will not be seen most likely for several years until new teachers are trained and new textbooks are issued that reflect the changes. The California Reading Task Force's report called for sweeping changes, particularly a more "balanced" approach to reading instruction that gives intensive systematic phonics its due. The task force also recommended ongoing assessment of students' reading skills, early intervention programs, more books for school libraries, limiting class sizes, new training, and new books. That raises serious questions about how this can be done and where the state will find the money to pay for it all.

But there also appears to be resistance within elements of the bureaucracy itself. A week after the task force issued its findings, the English Language Arts and English as a Second Language Textbook Adoption Committee held its "Invitation to Submit" meeting, at which it was made clear that until the legislature says otherwise, the task force's recommendations were just that. "The Reading Task Force has no impact on the evaluation of adoption," said committee member Glen Thomas. "The [old] K–8 Instructional Resources Evaluation Form is what publishers need to be concerned with." Another committee member, Dennis Parker, was more blunt: "Balance does not mean 50-50."

National standards will continue to overshadow California. The prospect of California having to comply with top-down standards set at the federal level is very real as long as the state receives Goals 2000 grants. Although U.S. Secretary of Education Richard Riley insists that the program contains "zero regulations," there are a number of thinly-disguised federal mandates. In addition to mandating "voluntary" standards, the law imposes onerous spending requirements, issues federal "skills" certificates, and ultimately shifts the educational agenda from the states to the federal government.

Goals 2000 will drive national standards, not only because of its mandates regarding curriculum and assessments but also because of the revolving door that exists between various elements of government bureaucracy and vested interest groups, as well as individual education "experts." Even the de facto standards in textbooks and standard assessments seem preferable to allowing the long arm of contemporary government such an "up close and personal" entry into the lives of youth.

School-To-Work is among the latest Goals 2000-related federal programs to usurp state autonomy and again divert the standards question away from academics and on to more vocational skills. Congress debated and passed the School-To-Work Opportunity Act in conjunction with Goals 2000 in 1994. The law was reauthorized in 1995. Designed ostensibly to create an internationally competitive workforce, federal School-To-Work legislation creates a National Skills Standards Board to evaluate and certify the skills of potential employees. School-To-Work enjoys widespread support among business leaders, who spend millions each year retraining poorly educated graduates. But two objections emerge: first, students who do not receive skills certificates, for whatever reason (including non-participation in the program) will be put at a competitive disadvantage; and second, the reemphasize on work skills could represent a return to the non-academic standards which dominated the curriculum in the early 1980s, when students graduated high school with courses in shop, home economics, and food.

Also, California is one of 17 states involved in the New Standards Project which has continued to forge ahead in spite of the intense criticism surrounding the development of national standards. In drafting content and performance standards, the project reviews the national standards as they emerge from federally and privately financed panels as well as those being developed in partner states. The State Legislature budgeted $500,000 in membership dues for California's continued participation in the project. It is not clear how, or if, this effort will mesh with the work of the new 21-member state Standards Commission, whose members are to be appointed by the Governor and the State Superintendent of Public Instruction, under AB 265. The State Senate is at work on follow-up legislation, SB 430, which will clarify who will appoint the commission, and how the commission will operate. The new legislation also includes an amendment requiring any new assessment system be based explicitly on the standards that come out of the commission.

Conclusion: Can We Get There From Here?

> *There will be no renaissance without revolution. . . . We must transform America's schools.*
>
> –President George Bush, America 2000

> *A culture that glamorizes glad-handing and mediocre levels of learning is hardly compatible with global forces that daily put a higher premium on knowledge. If the notion is allowed to stand, it will do our children a terrible disservice.*
>
> –Public Agenda Foundation, 1995

Knowing the penchant of education officials to hijack valid concepts and reshape them into self-serving mandates and regulations, initiating reform aimed at higher academic standards is like walking the razor's edge. Even so, it is a journey that must be attempted.

Americans across the political spectrum strongly and consistently support higher standards, even when they know the possible negative consequences for students' "self-esteem." A recent report by the liberal Public Agenda Foundation, "Assignment Incomplete: The Unfinished Business of School Reform," indicates that testing, withholding diplomas, toughening grading, and establishing clear guidelines for what students should learn were viewed as positive actions among the general public.[45]

To succeed, the journey must achieve greater participation by local communities and parents. California's schools cannot afford to continue along their present course of state-mandated standards, steeped in non-academic subject matter and untried educationist theories about critical thinking and self esteem.

Recommendations

For Parents:

- Inquire whether schools and districts have a "basics first" philosophy. Don't just ask for stated curriculum goals and academic standards. Demand academic excellence.
- Determine whether schools implement a systematic phonics approach to reading. Obtain the State Reading Taskforce's report, *Every Child A Reader,* available from State Superintendent Delaine Eastin's office. Bill Honig's criticism of whole language and his conversion to the merits of skills instruction is detailed in *How Should We Teach Our Children To Read? The Role of Skills in a Comprehensive Reading Program: A Balanced Approach* (Far West Laboratory for Education Research and Development, San Francisco). Though Honig tries to please everyone, he offers a devastating critique of the "two myths of whole language," and demonstrates why phonics is essential to a good reading curriculum. The Virginia-based National Right to Read Foundation is a clearinghouse of information on phonics and whole language.[46]
- Monitor homework and/or classroom assignments, particularly essays, for an academic as opposed to an "attitudes" focus.
- Consider home use of E. D. Hirsch, Jr.'s *Core Knowledge Series: What Your First-*

Sixth Grader Needs to Know, published by Core Publications, Inc. The content builds on prior foundations of information through a grade by grade sequence of specific guidelines in history, geography, mathematics, science, language arts, and the fine arts. Also excellent are William J. Bennett's *The Book of Virtues* and *The Moral Compass,* both published by Simon and Schuster.

For Districts:

- Review current standards for academic rigor, appropriate scope and sequence, and measurability. Get back to basics by writing new standards which eschew teaching fads and require basic instruction in reading, grammar, composition, correct spelling, addition, subtraction, multiplication, division, fractions, and decimals.
- Re-examine collective bargaining agreements with local teachers' unions which may interfere with curriculum reform efforts.
- Require principals and curriculum planners to read the book, *World Class Schools: New Standards for Education,* by Donald M. Chalker and Richard M. Haynes, based on 10 international school systems.
- Read and apply former Assistant Secretary of Education Diane Ravitch's book, *National Standards in American Education: A Citizen's Guide* (Brookings Institution, 1995). This is a good primer on the standards movement and the importance of skills. The American Federation of Teachers recently published "Making Standards Matter: A 50 State Report on Efforts to Raise Academic Standards," which argues that high standards offer an opportunity for the public schools to turn themselves around and regain public confidence. Also, see the recently released report, "What Secondary Students are Expected to Know: Gateway Exam Taken by Average-Achieving Students in France, Germany, and Scotland." The U.S. Department of Education published in the 1980s an acclaimed series of pamphlets entitled *What Works,* focusing on all elements of curriculum and schooling. Though the series is long out of print, it may still be found through ERIC.

For California's State Government:

- A new statewide assessment model is a *fait accompli.* In the past, assessment drove curriculum and quality suffered. With that in mind, the Legislature should eliminate the current curriculum frameworks and mandate the development of a basic statewide model for standards prior to the development of the new assessment system, which will not be completed until at least 1998.
- The Legislature should enact legislation adding 30 public members to the Governor's Standards Commission to ensure a cross section of community and parental participation in the development of standards. Specified appointments from both houses should be required to guarantee extensive parental representation on the Commission.
- The Governor and the Legislature should work to streamline the textbook adoption process and place greater authority with districts as much as is possible within the constitutional restrictions of the textbook adoption program.
- The California State University should be supported in its attempt to eliminate remedial courses within its system. The sending districts should be required to pay for remediation of its high school graduates.

- The Legislature should pass legislation eliminating teacher tenure and revamping teacher education in the state's universities. Prospective elementary school teachers need to be trained in intensive systematic phonics instruction. Recent surveys indicate the general public supports these reforms, as well as merit pay.

For the Federal Government:

- The quality of American education is not dependent on the existence of a federal bureaucracy. Congress should pass H.R. 1883, which eliminates the Department of Education and returns authority for education to parents, teachers, communities, and states in the form of block grants. Programs are transferred to other departments under this proposal, called the "Back to Basics Education Reform Act."
- Congress should avoid the proposed combining of the departments of Education and Labor. Instead, we should consolidate job training programs into one or more block grants and place them under the jurisdiction of the Labor Department.
- Congress should repeal provisions of the Improve America's Schools Act requiring states to send plans for state standards and curriculum to the federal government. Furthermore, it should preserve local and state authority over expenditures by repealing the "opportunity to learn" standards in Goals 2000/IASA which potentially subject states to judicial rulings.

The experience of California shows that only with these reforms can real education standards, higher expectations for students, and accountability for teachers be realized. To go beyond the mantra of standards, it is vital to have parents, teachers, and, yes, politicians involved in this effort. But educating students for the 21st century requires these measures sooner rather than later.

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Appendix: Glossary

America 2000: A 1989 document that set broad national goals to raise academic standards, it was the product of a meeting between President Bush and all 50 governors. President Clinton transformed it into a federal program, greatly expanding its scope, and renamed it Goals 2000.

CAP: California Achievement Program, a now-defunct exam used to measure the skills of elementary school students.

CLAS: California Learning Assessment System, a "performance-based" test implemented in 1992 to replace CAP, and discontinued in 1994. Among things that CLAS did not test were spelling, punctuation and grammar.

CRTF: California Reading Task Force, a 24 member panel of education experts, teachers, parents, and community members, formed to assess the present methods of reading instruction and suggest improvements.

Goals 2000: See America 2000, above.

"Learning-to-Learn" Skills: "Skills" such as "critical thinking" and "conflict resolution" that center on what education progressives call "the big picture" as opposed to "minutia," which is their term for rules of grammar, mathematical principles, and historical and scientific facts.

"Look-Say": A method of teaching students to read by having them identify words with pictures.

NAEP: National Assessment of Education Progress, a test of basic educational skills, administered nationwide.

OBE: "Outcome-Based Education" (in California, also called "Performance-Based Education"), a nebulous, virtually impossible to define phrase used as the name for a host of diverse education programs in many different school systems. All have in common the abandonment of traditional curricula and skills instruction in favor of "goals" such as "interpersonal communication," "coping," and "community living."

PACE: Policy Analysis for California Education, an independent-but largely government-funded-education research institute.

"Performance-Based Education": See "Outcome-Based Education," above.

SAT: Scholastic Achievement Test, a privately administered college entrance exam.

"School-To-Work": A federal program that funds a National Skills Standards Board to evaluate and certify the skills of potential employees.

"Whole Language": A method of teaching students to read by having them identify words by sight, rather than sounding out words using traditional phonics.

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III. Guidance/Resources

GENERAL RESOURCES

The Fall and Rise of Standards-Based Education

by Robert J. Marzano and John S. Kendall
(http://www.mcrel.org/products/nasbe/)
A National Association of State Boards of Education
(NASBE) Issues in Brief

Preface

Over the last several years, state boards of education have become increasingly engaged in the development of content and performance standards and the assessments that will accompany them. In responding to board members' requests for additional information on this critical topic, The National Association of State Boards of Education (NASBE) asked Robert Marzano and John Kendall of the Mid-continent Regional Educational Laboratory (McREL), who have spent five years studying standards documents and related subject-area materials, to write an Issue Brief on the move toward standards-based education.

The resulting brief is divided into two main sections:

1) a brief **historical overview** that puts the standards movement in the context of recent education reform efforts and surveys some of the problems that have arisen in the development of standards at the national level; and

2) a **technical review** that discusses the nature and technical aspects of standards in more detail and summarizes the McREL resource data base that is available to states, districts and schools as an aide in their development of standards.

There are few issues more important to education policymakers today than the development of standards and assessments that fundamentally define what students should know and be able to do—and how these students should demonstrate their knowledge and skills. Yet first-rate standards at the state and local levels, as Marzano and Kendall and other reports have pointed out, will take years to develop and refine. I urge state board members to stay engaged in this process, know the issues, and ask the tough questions regarding their state's standards documents. These standards define—for students, teachers, parents, and the community—what your education system is all about.

Brenda Welburn
Executive Director
National Association of State Boards of Education

For more information, visit the NASBE Web Site.(http://www.nasbe.org/)

Part One

Many, if not most, educators are unaware of the impact the very discussion of standards has had on American education, let alone the reorganization of schools around standards. Educational policy analyst.Anne Lewis (1995) writes that "whether lauded as a sign of progress or scorned as anathema," the standards movement is one of the most talked about issues in school reform (p. 745). Researchers Robert Glaser and Robert Linn assert that it might be only in retrospect that we recognize the importance of the current discussion of standards in American education:

> In the recounting of our nations' drive toward educational reform, the last decade of this century will undoubtedly be identified as the time when a concentrated press for national education standards emerged. The press for standards was evidenced by the efforts of federal and state legislators, presidential and gubernatorial candidates, teacher and subject-matter specialists, councils, governmental agencies, and private foundations. (Glaser & Linn, 1993, p. xiii)

When and where did the discussion of standards originate? Where will it lead us? In this monograph, we attempt to answer these and other basic questions about standards.

A Brief History of the Modern Standards Movement

Former Assistant Secretary of Education, Diane Ravitch, is commonly recognized as one of the chief architects of the modern standards movement. In her book, *National Standards in American Education: A Citizen's Guide* (Ravitch, 1995), Ravitch explains the rationale for standards in a straightforward manner:

> Americans . . . expect strict standards to govern construction of buildings, bridges, highways, and tunnels; shoddy work would put lives at risk. They expect stringent standards to protect their drinking water, the food they eat, and the air they breathe. . . . Standards are created because they improve the activity of life. (pp. 89)

Ravitch asserts that just as standards improve the daily lives of Americans, so too will they improve the effectiveness of American education: "Standards can improve achievement by clearly defining what is to be taught and what kind of performance is expected." (p. 25)

Many educators see the publication of the now famous report, *A Nation at Risk,* as the initiating event of the modern standards movement. Ramsay Seldon, Director of the State Assessment Center at the Council of Chief State School Officers, notes that after this prominent expose on public education, state and local leaders set out to improve the education system through new policies such as increasing the rigor of graduation requirements. When these efforts produced disappointing results, policymakers turned to national goals and standards:

> There was a feeling of urgency that the education system needed to be stronger, and that in addition to what states and districts and individual schools were doing we needed a stronger presence at the national level. . . . We recognized that we didn't need a national curriculum, so national goals and voluntary national standards came to be seen as a good mechanism for providing a focus. (In O'Neil, 1995, p. 12)

Researcher Lorrie Shepard also cites *A Nation at Risk* as a critical factor in the modern standards movement. Shepard (1993) notes that after the publication of the report, the rhetoric of educational reform changed drastically. It began to make a close link between the financial security and economic competitiveness of the nation and our educational system. Who will soon forget the chilling words often quoted from *A Nation at Risk:* "The educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a nation and a people. . . . We have, in effect been committing an act of unthinking, unilateral educational disarmament. "(National Commission on Excellence in Education, 1983, p. 5)

These growing concerns about the educational preparation of the nation's youth prompted President Bush and the nation's governors to call an Education Summit in Charlottesville, Virginia in September, 1989. At this summit, President Bush and the nation s governors, including then-governor Bill Clinton, agreed on six broad goals for education to be reached by the year 2000. Two of those goals (3 and 4) related specifically to academic achievement:

> **Goal 3:** By the year 2000, American students will leave grades 4, 8, and 12 having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.
>
> **Goal 4:** By the year 2000, U.S. students will be first in the world in science and mathematics achievement. (National Education Goals Panel, 1991, p. ix)

Soon after the summit, two groups were established to implement the new educational goals: the National Education Goals Panel (NEGP) and the National Council on Education Standards and Testing (NCEST). Together, these two groups were charged with addressing unprecedented questions regarding American education such as: What is the subject matter to be addressed? What types of assessments should be used? What standards of performance should be set?

The summit and its aftermath engendered a flurry of activity from national subject matter organizations to establish standards in their respective areas. Many of these groups looked for guidance from the National Council of Teachers of Mathematics who pre-empted the public mandate for standards by publishing the *Curriculum and Evaluation Standards for School Mathematics* in 1989. As education reporter Karen Diegmueller (1995) explains, the NCTM standards "redefined the study of math so that topics and concepts would be introduced at an earlier age, and students would view math as a relevant problem-solving discipline rather than as a set of obscure formulas to be memorized." (Diegmueller, 1995, p. 5) The National Academy of Sciences used the apparent success of the NCTM standards as the impetus for urging Secretary of Education Lamar Alexander to underwrite national standards-setting efforts in other content areas. According to Diane Ravitch, then an assistant secretary of education, "Alexander bankrolled the projects out of his office s discretionary budget." (Diegmueller, 1995, p. 5) The National Science Teachers Association and the American Association for the Advancement of Science quickly launched independent attempts to identify standards in science. Efforts soon followed in the fields of civics, dance, theater, music, art, language arts, history, and social studies, to name a few.

Troubled Times

Despite the publicity given the national goals, the federal support for standards, and the enthusiasm of educators from various subject areas, critics of the standards movement also caught the public's attention. Among the issues raised by these critics were:

Resources—Some saw the standards movement as a major drain on resources that should be used for more pressing needs such as basic educational materials. For example, Theodore Sizer, founder of the Coalition of Essential Schools, noted that in many classrooms, "The maps on the walls still call [Zaire] the Belgian Congo. Those are the things that just cry out for attention." (In Diegmueller, 1995, p. 5)

Educational Apartheid—Other critics saw the standards movement as another burden that would be placed on the shoulders of those who traditionally do not do well in schools. Curriculum professor Michael Apple noted that: National standards and national testing are the first steps toward educational apartheid under the rhetoric of accountability. (Diegmueller, 1995, pp. 56)

Standards as New Attempts at Previous Failed Reforms—Still others saw the standards movement as a thinly veiled attempt at a type of educational reform that had been tried a number of times before. For example, Elliot Eisner noted the similarity of the standards movement to the efficiency movement of the early 1900s:

> The efficiency movement, which began in 1913 and lasted until the early 1930s, was designed to apply the principles of scientific management to schools. Its progenitor, Frederick Taylor, the inventor of time-and-motion study, was a management consultant hired by industrialists to make their plants more efficient and, hence, more profitable. By specifying in detail the desired outcomes of a worker's efforts and by eliminating "wasted motion", output would increase, profits would soar, wages would rise, and everyone would benefit. (Eisner, 1995, p. 159)

According to Eisner, school administrators soon found that the basic concept underlying the efficiency movement—namely that one could mechanize and routinize teaching and learning—did not work. Educators would no doubt come to the same conclusions about standards, opined Eisner.

The standards movement was also likened to the failed behavioral objectives movement of the 1960s. Again, the basic notion behind behavioral objectives was to define educational goals in terms that were sufficiently specific to determine without ambiguity whether or not students had achieved them. Through his book, *Preparing Instructional Objectives,* published in 1962, Robert Mager routinized and popularized the process of constructing behavioral objectives to such an extent that teachers in virtually every subject area, at every grade level, were writing behavioral objectives all across the country during the 1960s. For Mager, an objective must identify the expected behavior in detail, the conditions in which it is to be displayed, and the criterion that make it possible to measure the student's performance in relation to the criterion. An example of a behavioral objective following Mager's criteria would be: "At the end of a 50-minute period of instruction, students will be able to complete eight out of ten problems in two-column addition within a five minute period.

"This level of detail, although possibly effective instructionally, created a system that was overwhelming for teachers. As Eisner notes, the approach required that schools construct hundreds and sometimes thousands of behavioral objectives to specify the outcomes of instruction. Soon, schools and districts became bogged down by the sheer weight of numbers, and the movement lost steam.

Content—In addition to its association with the flawed efficiency and behavioral objective movements of the past, the standards movement received a fair amount of criticism for the very content it promoted. Perhaps the lowest point in the standards movement was the debate over the history standards. In the fall of 1994, Lynne V. Cheney, a fellow of the American Enterprise Institute, unleashed an attack on the U.S. History standards that, along with science, had been the first standards project to receive funding from the Department of Education in 1991. Cheney accused the history standards of portraying the United States and its white, male-dominated powerstructure as an oppressive society that victimizes minorities and women. She further charged that the history standards ignored such traditional historical figures as George Washington and Robert E. Lee to placate proponents of multi-culturalism. Suddenly, the rather academic discussion of standards burst onto the national scene. Diegmueller notes that:

> Cheney's views won such exceptionally wide exposure because, as chairwoman of the National Endowment for the Humanities, she had lobbied for history standards, funded the project, and selected its leaders and many of the people on its 29-member board. Soon it became evident that the criticism was not about to subside—even though there were far more supporters than detractors. The U.S. Senate even weighed in, denouncing the history standards by a vote of 99 to 1. (Diegmueller, p. 8)

To date, the history standards have not recovered from the negative public perception generated by Cheney's criticisms.

Volume of Material—Perhaps the ultimate criticism of the national efforts to establish standards was the charge that, once developed, they were simply too cumbersome to use. In the beginning, policymakers and educators had expected to see concise standards that were symmetrical in tone and format. However, as the standards drafts and final documents were produced, it became clear that they were far from concise. Chester Finn noted that: "The professional associations, without exception, lacked discipline. They all demonstrated gluttonous and imperialistic tendencies." (Diegmueller, p. 6)

At the time of Finn's statement in 1995, the standards documents, taken together, weighed about 14 pounds, stood six inches tall and contained over 2,000 pages. Since then, more documents, more pounds, and more inches have been added to the total mass of standards. By contrast, the Japanese national curriculum fits into "three slender volumes, one for elementary, one for lower secondary, and one for upper secondary." (Ravitch, 1995, p. 15) Ron Brandt, Executive Editor of the Association for Supervision and Curriculum Development, acknowledged the problem of the sheer volume of the standards in the following way:

> I would describe them as an ambitious conception of what professional educators, most of whom are advocates or specialists in the various school subjects, want students to learn in those subjects. It's the classic curriculum dilemma faced by every principal, central administrator, and generalist teacher: specialists naturally expect a lot; they love their subject and they know its possibilities. Taken as a whole, however, such statements of aspirations are overwhelming. (Brandt, 1995, p. 5)

In summary, the once bright promise of subject area standards, born from a desire to improve the rigor and effectiveness of American education, has faded under a wide array of criticisms, and the movement itself has become bogged down under its own weight.

Is the Standards Movement Still Alive?

Given the intense criticism of many aspects of the modern standards movement, there are some who believe that it is, for all practical purposes, dead. Ron Brandt explains:

> Now that some of the original sponsors are disappointed in the new standards because they are not what was expected, what does that mean for educators? Apparently, these standards will not soon become a national curriculum or the basis for a set of high-stakes tests. Under the circumstances, educators can breathe a sigh of relief and, with discretion, put them to use in the endless task of improving curriculum and instruction. (1995, p. 5)

In general, we agree with Brandt that America will not soon have a set of nationally accepted standards. In addition to the problems cited above with the standards as developed by the national subject matter groups, the impetus for reform at the federal level has been halted because of a changing political climate. This has been dramatically illustrated by the demise of the National Education Standards and Improvement Council (NESIC). Created as part of the Goals 2000 legislation passed in 1994, NESIC was supposed to oversee the development of voluntary national content standards and "certify" the standards created by states. But by June of 1995, education policy analyst David Cohen was writing that "NESIC seems to be dead on arrival. Barely half a year after Goals 2000 was signed into law, Republicans took control of Congress. Although many Republicans had supported the legislation in the previous Congress, the new faces were generally more conservative and had little use for any sort of national school reform. They had especially little use for an agency that would devise, promulgate and certify national educational standards." (Cohen, 1995, p. 752)

At the same time, the standards movement at the state level has also been problematic. Campaigns have been mounted to stop the identification of state standards in Virginia, Colorado, Oregon, Pennsylvania and Washington, to name a few. A recent study by the American Federation of Teachers (Gandal, 1995) found that state standards are, for the most part, weak: Only 13 states have standards that are strong enough to carry the weight of the reforms being built upon them. (p. 13)

However, **we do not believe that the standards movement is dead.** In fact, we assert that the logic behind organizing schooling around standards is so compelling as to make standards-based school reform something that schools and districts will implement even in the absence of federal or state mandates or incentives. Indications are that the standards movement, though fallen from grace at the national level, is rising in reform efforts at the local level; over the last year, the professional development arm of our organization, the McREL Institute, has seen a greater than threefold increase in the number of districts and schools who have contracted for assistance in the development of standards and benchmarks. And even the AFT study concluded that it is not too late "in most states for changes to be made that will strengthen their standards and enhance their efficacy in improving student achievement." (p. 31) There appear to be at least four reasons why standards represent one of the most powerful options for school reform:

Reason #1: The Erosion of the Carnegie Unit and the Common Curriculum

> Although 90 years old, the Carnegie unit is still a basic structural feature of American education. As initially defined in 1906 by the President of the Carnegie Foundation for the Advancement of Teaching, the Carnegie unit was "a course of five periods weekly throughout an academic year." (In Tyack and Tobin, 1994) By convention, these periods had come to be thought of as 55 minutes long. A committee convened by the Carnegie Foundation also set standards for the content and duration of specific

courses, "specifying in great detail the content of units in subjects like English, mathematics, Latin, Greek, foreign languages, history and science. Thus, they standardized not only time and credits, but gave pride of place to traditional academic subjects. . . . " (p. 461).

Initially, then, the Carnegie unit represented an implicit set of standards. As adopted by public school systems, Carnegie units required that high schools cover specified content in a specified period of time. For decades, this system worked fairly well.

Yet over the years schools have moved away from a central core of knowledge and skill. From the 1940s until the mid-1970s, the emphasis on serving the interests of individual children generated a geometric expansion of the number of courses that constituted the high school curriculum. By the mid-1970s, the U.S. Office of Education reported that more than 2,100 different courses were being offered in American high schools. (Ravitch, 1995, p. 37)

This trend toward ever-expanding offerings and ever-decreasing uniformity in the school experience still exists today. This is evident in studies that have focused on how teachers use time. To illustrate, in a study of the content teachers emphasize within reading and the language arts, Berliner (1984) found that one fifth grade teacher could find only 68 minutes a day of instruction in reading and language arts, while another teacher was able to find 137 minutes a day. At the second grade level one teacher allocated 47 minutes a day for reading and language arts, while another teacher managed to find 118 minutes a day, or 2 1/2 times more per day to teach reading and language arts.

In summary, where the content covered and the manner in which time is spent was at one time fairly uniform in American education, today there is little consistency in how much time students spend on a given subject or the knowledge and skills covered within that subject area.

Reason # 2: The Variation in Current Grading Practices

Most educators and non-educators assume that grades are precise indicators of what students know and can do with a subject area. In addition, most people assume that current grading practices are the result of a careful study of the most effective ways of reporting achievement and progress. In fact, current grading practices developed in a fairly serendipitous way.

Mark Durm (1993) provides a detailed description of the history of grading practices in America, beginning in the 1780s when Yale University first started using a four-point scale. By 1897, Mount Holyoke College began using the letter grade system that is so widely used in education today.

For the most part, this 100-year-old system is still in place today. Unfortunately, even though the system has been in place for a century, there is still not much agreement as to the exact meaning of letter grades. This was rather dramatically illustrated in a nationwide study by Robinson & Craver (1988) that involved over 800 school districts randomly drawn from the 11,305 school districts with 300 or more students. One of their major conclusions was that districts stress different elements in their grades. While all districts include academic achievement, they also include other significant elements such as effort, behavior, and attendance. Figure 1 lists the percentages of districts that include each of these variables in their grades.

Figure 1. Percentage of Districts Reporting Use of Effort, Behavior, and Attendance in Determining Grades

Grade Level	Effort	Behavior	Attendance
K	26%	4%	6%
1–3	26%	4%	7%
4–6	26%	4%	7%
7–9	32%	7%	14%
10–12	33%	8%	17%

The Robinson & Carver study was done using the official policies of school districts. In a separate study, we polled individual teachers on the extent to which they include effort, behavior, attendance, and the added variable, cooperation, in their grades. These findings are shown in Figure 2:

Figure 2. Percentage of Teachers Reporting Use of Effort, Behavior, Cooperation, and Attendance in Determining Grades

Grade Level	Effort	Behavior	Cooperation	Attendance
K (n=79)	31%	7%	4%	8%
1–3 (n=110)	29%	8%	4%	8%
4–6 (n=158)	30%	8%	8%	10%
7–9 (n=142)	36%	10%	8%	18%
10–12 (n=151)	36%	14%	9%	24%

Figures 1 and 2 imply that there is great discrepancy in the factors teachers consider when they construct grades. In effect, we have a situation in which grades given by one teacher might mean something entirely different from grades given by another teacher even though the teachers are presiding over two identical classes with identical students who do identical work. Where one teacher might count effort and cooperation as 25% of a grade, another teacher might not count these variables at all.

Reason #3: The Lack of Attention to Educational Outputs

Perhaps the most compelling argument for organizing educational reform around standards is the shift in emphasis from what schools put into the process of schooling to what we get out of schools that is, a shift from educational "inputs" to educational "outputs". Chester Finn describes this shift in perspective in terms of an emerging paradigm for education:

Under the **old** conception . . . education was thought of as process and system, effort and intention, investment and hope. To improve education meant to try harder, to engage in more activity, to magnify one's plans, to give people more services, and to become more efficient in delivering them.

Under the new definition, now struggling to be born, education is the result achieved,

> the learning that takes root when the process has been effective. **Only** if the process succeeds and learning occurs will we say that **education** happened. Absent evidence of such a result, there is no education—however many attempts have been made, resources deployed, or energies expended. (Finn, 1990, p. 586)

Finn asserts that the shortcoming of the old input paradigm of schooling came to light in the mid-1960s when the country set out to provide disadvantaged and minority students with better opportunities by providing them with better education. The U.S. Office of Education was commissioned by Congress to conduct a major study of the quality of educational opportunity. The result was the celebrated "Coleman Report" (after chief author and researcher, James Coleman), which was released in 1966. Finn explains that the report concluded that input variables might not actually have all that much to do with educational equality when equality was conceived of in terms of what students actually learned as opposed to the time, money, and energy that were expended. In later years, Coleman wrote about the study that its

> major impact [was] in shifting policy attention from its traditional focus on comparison of inputs (the traditional measures of school quality used by school administrators: per-pupil expenditures, class size, teacher salaries, age of building and equipment, and so on) to a focus on output, and the effectiveness of inputs for bringing about changes in output. (Coleman, 1972, pp. 149–150)

According to Finn, while many school reform efforts are still grounded in the old paradigm, some are beginning to embrace the output view of accountability. Among these new efforts, Finn cites the national goals established at the education summit in 1989:

> Perhaps even more portentous was the 1989 "education summit" held in Charlottesville, Virginia, at which the nation's governors and President Bush actually agreed to develop a set of national "goals" for education—goals that, as they were hammered out and made public in early 1990, have far more to do with outcomes than with service delivery. They also pledged to issue annual "report cards" on progress toward those goals. (Finn, 1990, p. 591)

In summary, the new, more efficient and accountable view of education is output-based—outputs defined in terms of specific student learnings in terms of specific standards.

Reason #4: Other Countries Do It

A final reason for considering a standards-based approach is that most of the other countries we say that we want to emulate rely on policies and structures that are fundamentally standards-based in nature. For example, in their study of standards-setting efforts in other countries, Resnick and Nolan (1995) note that Many countries whose schools have achieved academic excellence have a national curriculum. "Many educators maintain that a single curriculum naturally leads to high performance, but the fact that the United States values local control of schools precludes such a national curriculum." (p. 9)Although they caution that a well articulated national curriculum is not a guarantee of high academic achievement, Resnick and Nolan offer some powerful illustrations of the effectiveness of identifying academic standards and aligning curriculum and assessments with those standards. France is a particularly salient example:

> In texts and exams, the influence of the national curriculum is obvious. For example, a

> French math text for 16-year-olds begins by spelling out the national curriculum for the year so that all 16-year-olds know what they are expected to study. The book's similar table of contents shows that the text developers referred to the curriculum. Moreover, the text makes frequent references to math exams the regional school districts have given in the past. Students practice on these exams to help them prepare for the exam they will face; they know where to concentrate to meet the standard. (p. 9)

In a similar vein, a report published by NESIC, the National Education Standards and Improvement Council (1993), details the highly centralized manner in which standards are established in other countries. For example, in China, standards are set for the entire country and for all levels of the school system by the State Education Commission in Beijing. In England, standard setting was considered the responsibility of local schools until 1988, when the Education Reform Act mandated and outlined the process for establishing a national curriculum. The School Examinations and Assessment Council was established to carry out this process. In Japan, the ministry of education in Tokyo (Manibushi) sets the standards for schools, but allows each of the 47 prefectures (Ken) some latitude in adapting those standards. According to the NESIC report, "Most countries embody their content standards in curriculum guides issued by the ministries of education or their equivalents." (pc-51) Additionally, "A national examination system provides a further mechanism for setting standards through specifications of examinations, syllabuses and regulations, preparations of tests, grading of answers, and establishment of cutoff points." (pc-51)

What Have We Learned?

From history and from our work with schools and districts, we have learned at least two very important lessons about organizing schools around standards. First, **setting standards is a very technical process that should not be taken lightly.** A state, school or district that sets content area standards by convening group of teachers and administrators to identify standards without serious up-front consideration of technical issues, is asking for trouble. Second, **organizing schooling around standards is not a cookie cutter process—no one size fits all.** Standards-based approaches must be tailor made to the specific needs and values of individual schools and districts. In Part Two we consider some technical issues that surround the setting of standards.

Part Two

Technical Issues and the McREL Data Base

A school or district wishing to construct local standards, or augment their state standards, has a great deal of work ahead of it. Relative to the latter situation—augmenting state standards—the American Federation of Teachers report cited earlier (Gandal, 1995), found that at this point the vast majority of state documents are not specific enough for schools and districts to use to restructure their curriculums. Additionally, the vast majority of state documents deal with only three levels (e.g., grades K–5, 6–8, 9–12) or four levels (e.g., grades K–2, 3–5, 6–8, 9–12), yet most districts must deal with standards at all grade levels. Finally, many state documents are presented as "guidelines" to be used by local districts rather than as mandated standards that must be followed without alteration. Consequently, even where a sound state standards document exists, the schools and districts within that state will still have to do a great deal of standards writing and redesign if they wish to implement a standards-based approach.

As an aid in their design work, schools or districts (or states) might turn to the "national standards documents" from the various subject specific organizations. For example, the National Council of Teachers of Mathematics (NCTM) has published the *Curriculum and Evaluation Standards for School Mathematics* (1989), and the American Association for the Advancement of Science (AAAS) has published the *Benchmarks for Science Literacy* (1993). While one might assume that schools and districts need only consult these subject specific documents and copy standards verbatim to construct their local standards, this is not the case. This is because the various national standards documents vary conceptually in a number of important ways. For example, the manner in which standards are described or defined by a document in mathematics, let's say, might be quite different from the manner in which standards are defined within a document that focuses on science. Additionally, some content areas have multiple documents that identify standards and each document might take a slightly different or greatly different perspective on standards. For example, mathematics standards are identified within the NCTM standards document. However, mathematics standards are also identified in the following documents, each of which has slight and sometimes great differences in the ways in which standards are described:

- *Benchmarks for Science Literacy* by the American Association for the Advancement of Science, 1993.
- *Mathematics Assessment Framework* by the National Assessment of Educational Progress, 1992.
- *What Work Requires of Schools: A SCANS Report for America 2000* by the Secretary's Commission on achieving Necessary Skills, 1991.
- *Workplace Basics: The Essential Skills Employers Want* by Carnevale, Gaines and Meltzer, 1990.

In short, a state, school or district wishing to establish standards based on the national documents must first identify what they mean by a standard and the format their standards will take. Next, they must systematically analyze all the national documents translating them into a format and conceptual base compatible with their own. This, of course, can be a labor-intensive endeavor that requires valuable resources of a variety of types.

Our work with the McREL data base provides a convenient entree for explaining some of the technical issues about standards that policymakers and others working in education reform need to understand. As we began our efforts, we found that there were at least four key issues on which we had to take a very clear position-the issues of: 1) content versus curriculum standards; 2) types of content standards; 3) content versus performance standards; and 4) the need for levels of standards. Indeed, being aware of these four issues is key for anyone engaged in the standards movement. We briefly consider each of them here. For a detailed discussion of these and other issues, see *Content Knowledge: A Compendium of Standards and Benchmarks for K12 Education.*

1. Content Versus Curriculum Standards

A number of documents we analyzed contained a mixture of content standards and curriculum standards, yet did not make a distinction between the two. In simple terms, a **content** standard describes what students should know and be able to do; a **curriculum** standard describes what should take place in the classroom. Specifically, curriculum standards address instructional technique or recommended activities as opposed to knowledge and skill per se. The difference between the two can be illustrated from the following two statements from the National Council of Teachers of Mathematics (NCTM, 1989) framework. Within the document both statements are presented as elements of standards:< OL TYPE=a, b, c, . . . >

use estimation to check the reasonableness of results

describe, model, draw and classify shapes

Element a) describes a skill or ability a person might use to solve a real life problem. For example, you might use estimation to check the reasonableness of your calculations as to the amount of wood you would need to build a fence around your back yard. Element b), on the other hand, is not commonly used in real life situations. That is, it is difficult to imagine many situations that would demand the skill of being able to model, draw, or classify shapes, whether to solve an academic or a day-to-day problem. Rather, this kind of activity is best described as an instructional device to help students understand shapes or to provide a way for them to demonstrate their understanding of shapes. Therefore, it is a ***curriculum*** standard rather than a ***content*** standard. It might be said that curriculum standards describe the methods used to help students achieve content standards.

The McREL data base has content standards as its focus. There are two overarching reasons for this choice. First, content standards describe the goals for individual student achievement while curriculum standards provide information that contributes to reaching these goals. Second, curriculum standards, which usually focus on activities, projects or techniques, if interpreted rigidly, could leave teachers with little or no room for instructional diversity. It is important to note that even though we have not included curriculum standards in our data base, we assume that a school or district might wish to generate curriculum standards. Given that content standards have been clearly articulated, the complementary set of curriculum standards could be viewed as useful instructional suggestions for accomplishing the learning goals implicit in the content standards.

2. Types of Content Standards

Since our approach has a content (as opposed to curricular) orientation, the standards we have identified assume some of the characteristics of content area knowledge. Specifically, the standards identified within our data base generally fall into three broad categories representing the three general types of knowledge as exemplified in Figure 3:

In Figure 3, the first column provides examples of procedural knowledge, the skills and processes important to a given content area. The examples in the second column involve declarative knowledge. Declarative knowledge can be thought of as "information" and usually involves component parts. For example, knowledge of the concept of "democracy" includes understanding that decisions are made by the people, each person has a single vote, votes are weighted equally, and so on.

The last column contains items that are not simply declarative or procedural, but specify knowledge in context, information and/or skills that have particular meaning because of the conditions that form part of their description. Like the declarative/procedural distinction,

Figure 3: Types of Standards

Procedural	Declarative	Contextual
Performing long division	understanding the concept of a numerator	modeling numbers using number line
Setting up an experiment	knowing what an amoeba is	classifying organisms
Editing an essay	knowing the conventions of punctuation	using appropriate tone and style for a selected audience

this contextual knowledge is basic; a "piece" that cannot be further reduced without loss of important information. For example, modeling numbers using a number line involves a procedural part (the process of modeling) and a declarative part (the concept of numbers). However, the two combined are greater than the sum of the individual parts. The combination represents a basic unit of knowledge important to the domain of mathematics. The process of modeling in this context has specific characteristics that it does not have in other contexts and the characteristics of numbers that are highlighted in the modeling process are probably not highlighted quite so specifically in any other environment.

Given the unique features of procedural, declarative and contextual knowledge, we have chosen to code the various component parts of our data base as to which type of knowledge they represent. This is not to say that all standards developers would attend to this level of detail. However, given that the purpose of the resource data base is to create a flexible tool to be used by states, schools, and districts, we believed that such specificity was important, if for no other reason than to provide educators with a sense of the differing "structures" of various content areas. For example, based on the documents we have analyzed thus far, it appears that mathematics knowledge is 46% declarative, 41% procedural, and 13% contextual. However, science knowledge is 95% declarative, 2.5% procedural, and 2.5% contextual. Those constructing or reviewing their own standards using our data base might want to preserve these proportions or consciously emphasize one type of knowledge over another due to local priorities. For example, a school or district might want to emphasize procedural and contextual scientific knowledge, which deals with the scientific process, in lieu of some of the declarative scientific knowledge which deals more with scientific facts and concepts.

3. Content or Performance Standards?

One of the significant controversies within the developing science of standards-based education is whether standards should be content or performance based. Some take a clear content position describing standards in terms of knowledge and skill that should be acquired; others describe standards in terms of tasks through which students demonstrate knowledge and skill by their performance. This is the performance position. Performance standards differ from curriculum standards in that, like content standards, they are not designed as activities for the sake of instruction, but rather are descriptions, via tasks, of what it is students should know and be able to do to demonstrate competence.

The content position focuses on clearly defined declarative, procedural or contextual knowledge. The performance position presumes this knowledge is defined if it is embedded in a task, even though this task must be a narrower application of the knowledge. In other words, a content standard is a **statement of the knowledge** or understanding we would expect students to have. On the other hand, a performance task **describes a specific use of knowledge and skills**: it is not a description of knowledge, but a description of some application of it. For example, a content standard in science might specify that students should understand the characteristics of ecosystems on the earth's surface. The performance standard for that piece of declarative knowledge would specify the level of accuracy and the facts, concepts and generalization about ecosystems on the earth's surface that a student must understand to be judged as having obtained a suitable level of achievement. It would also put that knowledge in some type of performance environment by stating that the information must be presented, for example, in the form of an essay, a simulation, or an oral report with accompanying graphics. As the National Education Standards and Improvement Council notes:

> . . . performance standards indicate "both the nature of the evidence (such as an essay, mathematical proof, scientific experiment, project exam, or combination of these) required to demonstrate that content standards have been met and the quality of student performance that will be deemed acceptable . . . " (NESIC, 1993, p. 22)

We believe that performance standards are a critical component of a comprehensive, standards-based approach to schooling. In fact, performance standards and content standards have a hand-in-glove relationship. As Marc Tucker, co-director of the New Standards Project, has noted: "You can't assess kids' performance unless you give them a task, and you can't assess their degree of achievement unless they actually perform the task." (Tucker, 1992, p. S.3)

Content standards, then, can be effectively translated into assessable elements via the articulation of performance standards. We, therefore, **recommend that schools and districts articulate a set of content standards and a complementary set of performance standards**. The content standards identify what students should know and be able to do. The performance standards identify the environments in which that knowledge and skill should be demonstrated. Unfortunately, we see a trend nationally for schools and districts to develop performance standards only. Presumably, these schools and districts assume that a well-articulated set of performance standards will implicitly include content standards. There are two problems with such an approach.

First, by virtue of limiting the expression of knowledge and skill to that demonstrated in a particular task, performance standards have a limited scope, and it could take many performance standards to exhaust, if possible, the potential applications for any set of given content knowledge. Second, and still more problematic from the point of view of covering important knowledge and skills, performance tasks in isolation are rarely transparent as to the knowledge and skills required for their successful completion. To illustrate, consider the example of an open-ended performance task used in one state's assessment: "How much does it cost to take a shower?" (Wiggins, 1993, p. 204) To ask students to determine the cost of a shower is an excellent, real-world challenge; but if, in this state, the performance tasks are not based on specific content standards, it is not immediately evident what declarative, procedural or contextual knowledge this task is designed to assess. Initially, it might seem that an understanding of the British Thermal Unit (BTU) is the declarative knowledge critical to the "shower" task. However, without the explicit guidance given by a set of content standards, we must make a calculated guess that this is the critical knowledge intended as the focus of the task. On the other hand, if we have already determined through content standards that students should understand BTUs, there are any number of tasks (including the shower task) that we could construct to confirm whether the student has this knowledge, and how well the student knows it.

We believe that performance tasks (as standards) make clear how knowledge and skills are useful, but tasks in themselves fail to make clear all that is important. Therefore, states, schools, and districts would be advised to begin with content standards, and then use them to generate a complementary set of performance tasks.

4. The Need for Levels of Standards

Even a cursory review of the standards generated by different groups reveals very different perspectives on the level of generality at which standards should be stated. For example, the National Standards for Arts Education (1994, p. 34) provides this as a standard:

- Understands the arts in relation to history and cultures

  In contrast, a draft document from the *National History Standards Project* (1994, p. 84) lists the following as a standard:

  - *Knows the causes of the Civil War*

    The example from the National History Standards Project is obviously more specific than that from the National Standards for Arts Education. In addition, the History document provides a much more detailed level of sub-component information for its standards than does the Arts document. The extent to which standards are articulated in general versus specific terms is critical since the level of generality adopted by a state, school or district will affect the level of detail within the standards, the kind of comprehensiveness the standards aim for, and the number of standards produced.

The approach we have adopted is to articulate standards at a general level, yet define specific subcomponents at various developmental levels. These developmentally appropriate subcomponents are referred to as **"benchmarks."** To illustrate, consider the following content standard within mathematics: "demonstrates number sense and an understanding of number theory." This statement maps out a very general area within mathematics. Benchmarks for this standard appropriate at the high school level might include the following:

- Understands characteristics of the real number system and its subsystems.
- Understands the relationship between roots and exponents.
- Models numbers using three-dimensional regions.
- Benchmarks appropriate for middle school would include the following:
- Understands the relationship of decimals to whole numbers.
- Understands the relationship of fractions to decimals and whole numbers.
- Understands the basic difference between odd versus even numbers.
- Understands the basic characteristics of mixed numbers.
- Models numbers using number lines.

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Benchmarks, then, describe the specific developmental components of the general domain identified by a standard. Within our data base, benchmarks are provided at four levels, roughly corresponding to grades K–2 (Level I), 3–5 (Level II), 6–8 (Level III), and 9–12 (Level IV). The benchmarks within a given standard are intended as expectations for the upper end of the interval in which they are presented. To illustrate, below are the science benchmarks listed for the interval K–2 within the standard, "Understands essential ideas about the composition and structure of the universe and the Earth's place in it:"

- Knows that the stars are innumerable, unevenly dispersed, and of unequal brightness
- Knows that the sun can be seen only in the day time, whereas the moon is out sometimes at night and sometimes during the day
- Knows that the moon looks a little different every day, but looks the same again every four weeks (Kendall & Marzano, 1996, pp. 79–80)

These are expectations of what second graders should know. To translate these benchmarks into grade-level benchmarks, a school or district need only "map backwards" identifying which elements would be deleted or altered at lower grade levels. For example, first grade teachers might decide that the benchmarks above should be restated in the following way to be developmentally appropriate for first grade students:

- Knows that there are many stars scattered all over the sky
- Knows that the sun is seen during the day and the moon can be seen at night and sometimes during the day
- Knows that the moon changes in appearance
- Similarly, kindergarten teachers might conclude that the benchmarks should be written in the following way to be developmentally appropriate for kindergarten students:
- Knows that stars are seen in the sky at night
- Knows the sun is seen during the day and the moon is usually seen at night
- Thus, benchmarks written generally at four levels (as in our data base) can easily be expanded to individual grade levels.

The Format of the McREL Data Base

In all, the McREL data base contains 201 different standards and their related benchmarks. These standards are organized into thirteen major categories as follows:

1. **Mathematics:**

   9 standards, 349 benchmarks

2. **Science:**

   18 standards, 324 benchmarks

3. **History:**

   K–4 History: 4 standards, 55 benchmarks;

U.S. History: 10 standards, 141 benchmarks;

World History: 13 standards, 157 benchmarks;

Historical Understanding: 2 standards, 42 benchmarks

4. **Language Arts:**

13 standards, 372 benchmarks

5. **Geography:**

18 standards, 238 benchmarks

6. **Arts:**

Dance: 6 standards, 62 benchmarks

Music: 7 standards, 80 benchmarks

Theatre: 6 standards, 72 benchmarks

Visual Arts:5 standards, 42 benchmarks

Art Connections: 1 standard, 13 benchmarks

1. **Civics:**

29 standards, 427 benchmarks

2 Economics:

10 standards, 173 benchmarks

3 Foreign Language:

5 standards, 86 benchmarks

10. **Health:**

10 standards, 136 benchmarks

11. **Physical Education:**

5 standards, 105 benchmarks

12 Behavioral Studies:

4 standards, 100 benchmarks

13. **Life Skills:**

Thinking & Reasoning: 6 standards, 117 benchmarks

Working with Others: 5 standards, 51 benchmarks

Self-regulation: 6 standards, 59 benchmarks

Life Work: 9 standards, 90 benchmarks

These standards were constructed from the content of 85 documents reported in the Appendix. These documents range from nationally funded efforts such as the history standards developed by the National Center for History in the Schools, to state documents such as the California Department of Education science framework, to documents developed through privately funded efforts used as elementary and junior high school standards developed by the Edison Project. Quite obviously, it would take a school or district an inordinate amount of time to analyze the 85 documents listed in the Appendix at the level of detail we have undertaken. However, using the McREL data base, standards developers can identify declarative, procedural, and contextual benchmarks and the national documents in which those benchmarks are implicitly or explicitly stated, as well as identify the interrelationship between benchmark elements. A school or district should then be able to construct their own standards and benchmarks and an accompanying set of performance tasks.

Tailoring a Standards-Based Approach to Local Needs

Ultimately, states, schools, and districts must design standards to meet the needs of their community. In our experience, we have found that this tailoring process is tantamount to answering a series of specific questions. The full complement of questions standards developers must address and their possible answers are described in depth in the book *How to Design a Standards-Based District, School or Classroom* (Marzano & Kendall, in press). Here we consider four of the many questions articulated in that book:

1 How many standards and benchmarks will be articulated?

In all, the McREL data base lists 201 standards and 3,291 benchmarks for implementation in K–12 schooling. Clearly, a school or district could not expect a student to demonstrate competence in all of these (although they may be a part of instruction); sheer numbers would make such a system untenable. Given that there are 180 days in the school year and 13 years of schooling (assuming students go to kindergarten), there are only 2,340 school days available to students. If all benchmarks in the McREL data base were addressed, this would mean that students would have to learn and demonstrate mastery in one or more benchmarks every school day, or more than seven benchmarks every week.

Thus, a school or district will surely have to select from the standards and benchmarks presented in the database if it wishes to construct a system in which students are to be held accountable for each benchmark. A reasonable number of benchmarks seems to be about 600, distributed in roughly the following way:

Level I: K–2: 75

Level II: 3–5: 125

Level III: 6–8: 150

Level IV: 9–12: 250

Quite obviously, to implement this 600-benchmark cap, schools and districts would have to exclude quite a few of the benchmarks currently identified.

2. Will all selected benchmarks be considered necessary to demonstrate competence in a standard?

One possible way to alleviate the problem of too many benchmarks is to consider benchmarks as exemplars rather than as necessary components of a standard. Using this option, students would be held accountable for demonstrating a mastery of a sample of the benchmarks within a level for a given standard as opposed to all the benchmarks within a given level.

To illustrate, consider the benchmarks in Figure 4 for the science standard "Understands energy types, sources, and conversions, and their relationship to heat and temperature."

Figure 4. Benchmarks for Model Science Standard

LEVEL I (Grades K–2)	Knows that the sun applies heat and light to earth
	Knows that heat can be produced in many ways (e.g., burning, rubbing, mixing chemicals)
	Knows that electricity in circuits can produce light, heat, sound, and magnetic effects
LEVEL II (Grades 3–5)	Knows that things that give off light often also give off heat
	Knows that mechanical and electrical machines give off heat
	Knows that heat can move from one object to another by conduction
	Knows that some materials conduct heat better than others; materials that do not conduct heat well can reduce heat loss
	Knows that electrical circuits require a complete loop through which the electrical current can pass
LEVEL III (Grades 6–8)	Knows that energy comes in different forms, such as light, heat, chemical, nuclear, mechanical and electrical
	Understands that energy cannot be created or destroyed, but only changed from one form to another
	Knows that the sun is a major source of energy for changes on the earth's surface; the sun's energy arrives as light with a range of wavelengths consisting mainly of visible light with significant amounts of infrared and ultraviolet radiation
	Knows that heat energy moves in predictable ways, flowing from warmer objects to cooler ones until both objects are at the same temperature
	Knows that heat can be transferred through materials by the collision of atoms or across space by radiation; if the material is fluid, currents will be set up in it that aid the transfer of heat
	Knows that electrical circuits provide a means of converting electrical energy into heat, light, sound, chemical, or other forms of energy
	Knows that in most chemical reactions, energy is released or added to the system in the form of heat, light, electrical, or mechanical energy

LEVEL IV (Grades 9–12)	Knows that although energy can be transferred by collisions or waves and converted from one form to another, it can never by created or destroyed, so the total energy of the universe is constant
	Knows that all energy can be considered to be either kinetic energy (energy of motion), potential energy (depends on relative position), or energy contained by a field (electromagnetic waves)
	Knows that heat energy consists of random motion and the vibrations of atoms, molecules, and ions; the higher the temperature, the greater the atomic or molecular motion
	Knows that energy tends to move spontaneously from hotter to cooler objects by conduction, convection, or radiation; similarly, any ordered state tends to spontaneously become less ordered over time
	Knows that the energy of waves (electromagnetic and material) can be changed into other forms of energy (e.g., chemical and electrical), just as other forms of energy (chemical and nuclear) can be transformed into wave energy
	Knows that some changes of atomic or molecular configuration require an input of energy, whereas others release energy
	Knows that each kind of atom or molecule can gain or lose energy only in particular discrete amounts and thus can absorb and emit light only at wavelengths corresponding to these amounts; these wavelengths can be used to identify the substance
	Knows that fission is the splitting of a large nucleus into smaller pieces, and fusion is the joining of two nuclei at extremely high temperature and pressure; nuclear reactions convert a fraction of the mass of interacting particles into energy

A school or district that takes the "exemplar" approach to benchmarks would require students to demonstrate competence in a selected number of benchmarks per level. For example, a school or district might require students to demonstrate competence in two out of the three benchmarks for Level I; three out of five for Level II; five out of seven for Level III; and six out of eight for Level IV. This approach would allow a school or district to meet a larger number of standards without exceeding the recommended limit of 600 benchmarks discussed in the preceding section. It would also allow for more flexibility within the classroom, in that individual teachers would have the option to use those benchmark components that they judged most applicable for their students. However, this approach also results in less continuity of coverage within a content domain since different teachers will no doubt select different benchmark exemplars to illustrate student competence within the levels for a given standard. It is also important to note that this approach may defeat the designed purposes of some well-articulated standards, such as those developed by Project 2061, where upper-level benchmarks are predicated under the assumption that students are familiar with a logically prior concept addressed at an earlier level. If teachers select without regard to articulation, some of the value of this approach may be lost.

3. Will student performance be reported using course grade or standards?

Currently, most schools and districts report student progress using appropriate grades for broad academic areas organized within courses. However, current research and theory indicate that courses of the same title do not necessarily cover the same content. (Yoon, Burstein & Gold, not dated) In other words, two courses of the same name do not necessarily cover the same declarative, procedural, and contextual knowledge. If a school or district wished to use traditional grades but implement a standards-oriented approach, it would ensure that the benchmarks that have been identified would be distributed systematically throughout the various courses within content areas—that is, specific benchmarks would be assigned to courses based upon the elements they cover. Any two courses with the same title would not only cover the same benchmarks, but would place the same relative importance on the benchmarks they cover.

For example, assume that two courses of the same title were designed to cover the same seven benchmarks. The school or district could also determine which percentage of the grade each benchmark would command. In such a case, it might be determined that the first two benchmarks each accounted for 25% of the grade and the remaining five benchmarks accounted for 50% of the grade. Clearly, this would provide more precision for course descriptions and show an equivalence between "identical" courses that is not often found today.

In short, traditional grading practices and standards-based assessment are not incompatible. A school or district must simply distribute and weight the standards that have been identified across the various courses in a systematic, well-reasoned fashion.

The second reporting option a school or district might adopt is to report student progress by benchmarks. Rather than assign a single grade to a course, a teacher would report progress in some way for each benchmark covered in the course. In effect, for assessment purposes only, each benchmark component would be considered independent of the others covered within the course. When this approach is taken, schools and districts commonly employ rubrics as opposed to grades. A rubric is a description of the levels of understanding or skill for a given benchmark. For example, below is a rubric for the Level II mathematics benchmark **"Understands the basic role of place value:"**

1. Demonstrates a thorough understanding of the role and function of place value and provides insights that are not obvious when using the concept of place value.
2. Demonstrates a complete and accurate understanding of the role and function of place value as it relates to estimating or calculating addition, subtraction, multiplication, and division.
3. Displays an incomplete understanding of the role and function of place value as it relates to estimating or calculating addition, subtraction, multiplication, or division.
4. Has severe misconceptions about the role and function of place value as evidenced by severe place value errors in addition, subtraction, multiplication, or division.

Commonly, one of the described levels within a rubric is designated as the targeted level of skill or knowledge. For example, a score of 3 in the reporting rubric above might be selected as the target standard for the Level II mathematics benchmark, **"Understands the basic role of place value."**

Reporting out by benchmarks would, of course, require a record-keeping system that is far different from that currently used in most schools and districts. Each student's score on individual benchmarks would be recorded. Assuming the use of a four-point rubric, individual students would receive a score of 1 through 4 on each benchmark assessed within each standard. These scores could then be averaged to obtain an overall standard score at a given benchmark level.

4. Will all students be required to meet all standards?

A major decision facing a state, school or district that wishes to emphasize content area standards is whether students will be required to meet a targeted level of knowledge and skills. This approach is reminiscent of the mastery learning approach of the 1970s and early 1980s (see Levine & Associates, 1985) and the more recent outcomes-based approach, or OBE approach (Spady, 1988). In the context of the reporting rubric described previously, a mastery or outcomes-based approach would mean that students would be required to receive a score of 3 on each benchmark. If a student did not meet the targeted level for a benchmark (i.e., did not obtain a score of 3 on the rubric), he or she would be provided with additional instructional opportunities until he or she could meet the required proficiency. Of course, such a system can make extreme demands on resources. In a traditional system, no extra resources need be used if a student does poorly in a course. In a mastery or OBE system, each student who does not meet a standard is provided with whatever instructional and curriculum resources are necessary to ensure that the student meets the requirements. A variation in the theme of a comprehensive mastery or outcomes-based approach is to require that students meet the performance standards on some, but not all, benchmarks. Those benchmarks that are applied to all students would be considered a set of core requirements.

Conclusion

In this monograph, we have attempted to build a rationale for organizing educational reform around standards. Even though the standards movement at the national level has bogged down and state and district level efforts to effect such reform have been extremely uneven, standards-based education has a logic that is to us compelling. However, as compelling as that logic is, the process of designing a standards-based educational system is a difficult and technical task. We have described a data base, developed at the Mid-continent Regional Educational Laboratory, that we believe alleviates much of the technical detail work. We have also described a set of questions that, among many others, must be addressed if a standards-based approach is to be effectively implemented. We hope that our efforts will facilitate the transformation of American education to a system that holds itself and students accountable to specific standards of knowledge and skill.

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Eight Questions You Should Ask Before Implementing Standards-Based Education at the Local Level

by Robert J. Marzano (http://www.mcrel.org/roducts/eight/)

Are you a policy maker at the state level charged with formulating, modifying or evaluating state-wide academic standards for K–12 education? Or, are you a school district administrator or teacher responsible for contributing to the design and implementation K–12 academic standards in your district? If you are any of these people, how standards actually apply to classroom learning, achievement and assessment probably matter greatly to you. If your perspective is statewide, you probably will want to ask how state standards affect classrooms in your local school districts. If you are a district educator, you probably will want to ask how your district can go about the task of establishing standards for its students. Accordingly, the following questions may help you sort through the practical issues of standards-based education.

1. Where Will We Get Our Standards?
2. Who Will Set the Standards?
3. What Types of Standards Should We Include?
4. In What Format Will the Standards Be Written
5. At What Levels Will Benchmarks Be Written?
6. How Should benchmrks and Standards Be Assessed?
7. How Will Students Progress Be Reported
8. What Will We Hold Students Accountable For?

1. Where Will We Get Our Standards?

Options:

Use the standards document produced by your state. Every state except one is in the process of developing or has developed state standards. Yet, a study conducted by the American Federation of Teachers (AFT) reports that only 13 of 49 state documents are specific enough to be used effectively by teachers. The majority of state documents describe standards at levels of generality that do not provide sufficient clarity for classroom instruction, nor are they precise enough to serve as an instrument of accountability. Even so, schools and districts wish to adopt valid standards, and parents want to know how their children are performing academically compared with standards.

Use the national standards documents such as the ones published by national associations and subject matter groups, and the federally funded documents in other subject areas, which are now complete. Unfortunately, these documents commonly embed a description of requisite knowledge and skills within lengthy descriptions of performance activities, curriculum goals, instructional strategies, and the like. In order to glean what it is that students should know and be able to do would require the analysis of a veritable ocean of text—taken together, over 2000 pages and 14 pounds of documents. Clearly, this would not be an efficient use of time and resources.

Use studies that have attempted to synthesize the information in the national standards and state standards documents. For example, the Mid-continent Regional Educational Laboratory (McREL) has compiled and synthesized the standards and benchmarks found in 85 national and state level documents into a database containing 201 standards organized into thirteen major categories: mathematics, science, history, language arts, geography, the arts, civics, economics, foreign language, health, physical education, behavioral studies and life skills. The McREL database is meant as a resource for schools and districts designing their own standards. Also, the Council for Basic Education (CBE) is currently in the process of developing a similar database.

Recommendation:

Use one of the inventory studies of national and state documents (i.e., McREL or CBE) to construct district level standards or to augment the standards identified in the current state document.

2. Who Will Set the Standards?

Options:

A.Assign subject area teachers to identify the standards in their areas of expertise. Unfortunately, experience reveals that subject area teachers working in isolation commonly will create standards that are very different from subject area to subject area. Often, they will use quite different formats for their standards and write their standards at very different levels of specificity—some very specific, some very general.

B. Ask committees of teachers and community members to set standards in various content areas. Frequently, community members do not have enough sophistication in technical subject areas such as mathematics and science. Additionally, some community members will volunteer to work on a standards committee but may have personal agendas that are antithetical to the standards movement.

Recommendation:

Organize a steering committee to guide the standards-setting efforts in the district. This committee should be highly knowledgeable about the technical aspects of standards. The committee should oversee the development of subject area standards which, in the first instance, would be drafted by subject area teachers. The steering committee should ensure that the standards produced by the subject area specialists are written at the same level of generality and employ the same format. The collective work produced by these specialists should be considered the first draft of the district's standards. This draft would be presented to a group that is comprised of educators and community members who are non-educators. They should make suggestions as to additions, deletions and changes to the first draft of the standards. Then, these additions, deletions and changes should be redrafted by the steering committee and its specialists to produce a second draft. The second draft would be presented to all teachers in the district or a representative sample of teachers for review and comment. This information will be used to create the third draft of the document. The third draft then should be presented to the community at large. As many community members as possible should be involved in this review. Incorporating this feedback, the final draft of the standards and benchmarks then would be constructed.

3. What Types of Standards Should We Include?

Options:

A. Construct content standards in traditional subject areas such as mathematics, science, history, geography, language arts, fine arts, foreign languages and so on. These traditional subject areas would be the core of the curriculum. Historically, the basis for the standards movement at the national and local levels has been a description of essential knowledge and skills in the traditional subject areas. Often overlooked, however, is that these traditional subject areas include implicit standards in areas such as thinking, reasoning and work skills.

B. Establish standards in general reasoning skills, including the ability to make decisions, solve complex problems, make reasoned inductions and deductions and so on. These skills are commonly an implicit part of virtually every subject area anyway, but because they are implicit, they often are apt to remain hidden and obscure in the curriculum. Creating explicit standards in thinking and reasoning makes these skills explicit to teachers, students and parents.

C. Create standards that deal with general behavior in the world of work, such as managing time effectively, working well with others, managing resources and so on. Usually, these skills are valued by almost everyone and are addressed indirectly in each subject area. Creating specific standards in this area makes these skills and abilities explicit to teachers, students and parents.

Recommendation:

Establish subject area standards and general reasoning standards as the core of the curriculum. Work standards can be made explicit and addressed in classroom instruction but they should not carry the same weight as subject area and reasoning standards.

4. *In What Format Will the Standards Be Written?*

Options:

A. Draft standards and benchmarks as discrete elements of knowledge and skills. The advantage of this approach is that it gives teachers direction in terms of the specific knowledge and skills they should address, yet offers them flexibility in how this knowledge is to be applied and how it is to be assessed. The risk of this approach is that teachers may tend to teach specific benchmarks as isolated fragments of information, rather than integrated parts of a whole body of knowledge.

B. Draft standards and benchmarks as specific performance activities or performance tasks. The advantage of this approach is that it gives teachers specific guidance for how students are to apply knowledge. The disadvantages of this approach are twofold: The system can be forcefully prescriptive in that the list of performance tasks or performance activities becomes a mandated set of activities in which teachers and students must engage; and, the subject area knowledge that a performance task or performance activity is intended to address is not always obvious.

Recommendation:

Write explicit standards and benchmarks as specific elements of knowledge and skills but include examples of performance tasks or performance activities for each benchmark within the standards documents. In this way, teachers are provided with guidance as to how students can be asked to apply their knowledge, but those knowledge application activities are not mandated by the standards documents themselves.

5. *At What Levels Will Benchmarks Be Written?*

Options:

A. Write benchmarks at specified levels. Three common techniques are to write benchmarks at:

1. three levels (e.g., K–5, 6–8, 9–12),
2. four levels (e.g., K–2, 3–5, 6–8, 9–12) or
3. five levels (e.g., K–2, 3–5, 6–8, 9–10, 11–12).

The use of levels or intervals communicates a clear hierarchy of knowledge and skills. However, practically it implies that all assessment and reporting will be done at the upper end of each interval. For example, if three levels are used—option a) above—assessment of the benchmarks would be administered at grades 5, 8 and 12. However, this practice imposes an inordinate assessment and reporting demand on teachers and principals at those particular grade levels.

B. Write benchmarks for each grade level. This provides teachers with a great deal of 'itemized' guidance regarding a clear hierarchy of knowledge and skills that is grade level specific. However, this approach does not work well at the high school level where courses are the main organizational structure.C. Write benchmarks as course descriptions at various grade levels. This approach works well at the high school level but does not clearly communicate a hierarchic structure of knowledge and skills at grade levels below high school.

Recommendation:

Write grade level benchmarks for grades K–8 and course descriptions for high school. (Make sure, however, that the high school course descriptions contain explicit standards.)

6. How Should Benchmarks and Standards Be Assessed?

Options:

A. Use an externally developed test that employs traditional types of items. Here "external" means designed and administered outside of regular classroom instruction, and "traditional" means using a selected response format like multiple choice items. Although such tests are easily machine scored, they still take up a great deal of time. If a district or school wishes to assess standards in mathematics, science, history, reading and writing every year, this would mean that students would have to take a traditional test each year in each of these subject areas. This would require a great deal of testing outside of the regular classroom. Also, traditional selected response item formats usually do not require students to apply knowledge or demonstrate a deep understanding of the knowledge they are expected to learn.

B. Use an externally developed test that employs performance tasks. Performance tasks ask students to apply their knowledge in real-world scenarios. These tasks require students to 'construct' their own answers, as opposed to selecting from a set of pre-formed answers. Performance tasks allow for a better demonstration of students' understanding and application of knowledge and skills. A disadvantage of this approach is that it takes a long time to score these tasks since raters must make judgements as to the adequacy of students' responses. Additionally, it takes students a long time to complete these open-ended assessments; consequently, this approach also requires a great deal of testing outside the regular classroom.

C. Use assessment portfolios. The use of portfolios was once thought to be a viable way of having students demonstrate their knowledge in a variety of content areas in an economical and holistic manner. Experience has shown rather the opposite; the process of determining student knowledge and skills from portfolios is expensive and time consuming. And further, the research on the use of portfolios indicates that they are not capable of producing valid representations of, or generalizations about students' knowledge and skills within a given content area.

D. Use a variety of frequent assessment techniques in the classroom. With this approach, classroom teachers are responsible for assessing their students on standards and benchmarks. In this situation, teachers are free to use a variety of techniques including portfolios, performance tasks, traditional tests and informal observation. The advantage of this approach is that assessment of standards and benchmarks does not take away from regular classroom instruction; rather, it is integrated into regular classroom routine. The risk with this approach is that, unless the classroom assessment regimen is designed and planned carefully, there is no guarantee that teacher assessments will be reliable and valid.

Recommendation:

Use a variety of frequent assessment techniques as part of regular classroom instruction. And also, use externally developed traditional tests and performance tests administered to a sample of students at selected grade levels. These external assessments then may be used to ensure that teacher assessments are reliable and valid. The external assessments also may be used to compare performance of students in the district to the performance of the students from the norming sample used to develop the test.

7. How Will Student Progress Be Reported?

Options:

A. Report student progress on standards as a score on a test. This approach is straightforward and easily understood by parents. However, a single test score for a subject area cannot represent the breadth of standards within that content area.

B. Report student progress on standards as grades in courses. If the burden of assessing students' progress on standards is to be shouldered by classroom teachers, then grades in courses can represent progress on standards. The problem with this approach is that a single grade, like a single score on a test, cannot reflect the many possible profiles of achievement on multiple standards. One way of alleviating this problem is to establish a specific algorithm for converting performance on multiple standards to a single grade. For example, a grade of A would indicate superior performance on all standards addressed in the course; a grade of B would indicate superior performance on most standards but not all, and so on.

C. Report student progress on each standard using a rubric that describes various levels of knowledge and skills. The advantage of this approach is that it provides students, teachers and parents alike with highly specific information. The disadvantage is that it is a very different way of reporting progress compared with traditional grading. Even though rubric reporting by standard is a much more informative system than the traditional one, it might cause a negative reaction among parents who are used to seeing grading the way it was reported for them. Needless to say, extensive, prior communication with parents should be accomplished before implementing this approach to reporting on student progress.

Recommendation:

Continue to give traditional grades in all courses. This will provide parents with a sense that the system as they knew it is still functioning. However, in addition to traditional grading, report student progress on the numerous standards covered in each course using a rubric that describes levels of performance for that course. This will provide students and parents with highly specific and useful information about student performance on standards in each course.

8. What Will We Hold Students Accountable For?

Options:

A. Do not hold students accountable for specific levels of performance on any standards. This is the system we currently have in place. In virtually every state, the only standard students must meet to graduate is that they obtain a certain number of "credits," and a credit is earned by obtaining at least a "D" in a course. The advantage of this approach is that it is very easy to earn a high school diploma. The disadvantage of this approach is that students can graduate without acquiring any specific skills and abilities, such as the abilities to read, write and compute.

B. Hold students accountable for all standards across all major subject areas: reading, writing, mathematics, science, history, geography and so on. The advantage of this approach is that it establishes high expectations for all students in all major content areas. The disadvantage of this approach is that it is such a radical change from current practice that many students who currently graduate would not graduate if they were required to meet high standards in a variety of subject areas.

C. Hold students accountable for selected standards in selected content areas considered "basic" by educators and the general public (e.g., reading, writing and mathematics). The advantage of this approach is that it establishes expectations for all students but only in those content areas that are considered truly essential. Even this increase in expectations probably will lessen the number of students who graduate, but the decline in numbers will not be as drastic as it would be if high expectations were established in all major subject areas. The danger of this approach is the expectations will devolve into a set of minimum competencies which do not challenge students.

Recommendation:

Hold students accountable for standards in those content areas considered 'basic' by diverse stakeholders in a particular school district. Articulate standards in other areas not considered basic, and report students' standings relative to those standards. Consider this dual approach an interim step, leading eventually to student and teacher accountability for attainment of content knowledge and performance levels embedded in a common set of consensus standards.

Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education

by John S. Kendall and Robert J. Marzano (http://www.mcrel.org/standards-benchmarks/)

If you find this document helpful, but would like assistance in developing your state or local standards, McREL has included information about our standards-related services. For information about McREL's other standards-related products and services, including the availability of this document on CD-ROM see *Standards for K–12 Education*.

1. The Call for Standards

Since the publication of *A Nation at Risk* in 1983 (National Commission on Excellence in Education), there has been a growing consensus on what aspects of school reform are critical to the success of our nation's students. It is now understood that in the past, teachers have relied heavily upon textbooks to determine what is important to teach in each discipline, so much so that textbook manufacturers have become the de facto standard-setting group for the content areas. Coincident with this, testing companies, by virtue of the use to which standardized tests are put in school accountability, have provided schools and districts with measures of what students should know and be able to do in order to reach certain minimum standards-in short, testing companies have provided the de facto performance standards for schools. At the same time that the identification of important knowledge, skills, and performances has been relegated to textbook and test publishers, we have entered an age when information grows so rapidly that subject-matter experts are compelled to review their assumptions about the essential knowledge and skills of their disciplines. Clearly there is a need for expert subject-area guidance to determine what students should know and be able to do to prepare themselves for college and the world of work. In short, it is time to establish standards in a rigorous and systematic way.

Although there is national dialogue on the development of standards, there is clearly not a consensus across groups as to what form "standards" should take or how they should be used. The result is that the character, scope, and level of detail provided in standards often vary significantly from one subject area to another. Some subject-area groups have argued that the disciplines are so inherently different that a common approach to standards is not possible (Viadero, 1993); though, as one leading education thinker, Christopher Cross (1993), has said, "In real life, these subjects are not as clearly defined as the experts and advocates in a field might imagine or wish." Regardless of how different the discipline areas might be from one another, they each compete for a common ground: the limited amount of time and resources in the school day. Unless standards and benchmarks are presented in a roughly equivalent and useable format, decisions regarding curriculum or assessment can quickly become problematic. For example, it is difficult for a school or district to articulate a comprehensive set of standards if one subject area describes standards in terms of a performance vignette, as is the case with the work done by the Standards Project for the Language Arts, while another subject area describes standards in terms of specific components of knowledge and skills, as is the case with the mathematics standards developed by the National Council of Teachers of Mathematics. Finally, without a common format for standards, it is not likely that educators can recognize and take advantage of the possibilities for subject-area integration afforded by the commonalities that may be found across subject areas.

The purpose of the project is to address the major issues surrounding content standards, provide a model for their identification, and apply this model to identify standards and benchmarks in the subject areas. This project has been documented in a series of reports and updates (Marzano & Kendall, 1993; Kendall & Marzano, 1994, 1995). This report concludes the project, and reprints, with little or no revision, standards that were earlier identified in the subject areas of geography, the arts, and health. More substantive revisions have been made to standards in mathematics, history, and language arts. Areas that appear for the first time with this report are civics, economics, foreign language, physical education, and behavioral studies (sociology, psychology, and social anthropology). Also included are standards in thinking and reasoning, and an analysis and description of knowledge and skills considered important for the workplace; business and industry have recently identified this area of "workplace basics" as essential in the process of schooling. These standards have been augmented to address basic computer skills and are organized under the heading Life Skills.

The next section of this paper provides an overview of the current efforts toward standards development across subject areas. Section 3 describes in greater detail the types of technical and conceptual differences that have become apparent since the beginning of the standards movement and describes the model of standards and benchmarks adopted for this study. Section 4 presents key questions that should be addressed by schools and districts that are considering a standards-based strategy. Section 5 describes the overall process used in this project to identify standards and benchmarks, and Section 6 lays out the format and citation strategy used in the standards sections. Sections 7 through 19 provide standards and benchmarks for 12 separate areas, each section prefaced by a discussion of the process involved in generating those standards.

2. *Work Completed and Work in Progress*

Before describing the model of standards and benchmarks that is the basis for this project, it is useful to briefly consider the major efforts that are underway nationally to identify standards and benchmarks. These efforts will, of course, form the data base from which this project draws.

Mathematics

It is certainly no exaggeration to say that the publication of *Curriculum and Evaluation Standards for School Mathematics* in 1989 by the National Council of Teachers of Mathematics (NCTM) ushered in a new era relative to the role of national organizations in the practice of schooling. Through the *Standards* document, NCTM helped to form a new perspective on how national subject-area groups can contribute to the improvement of education when it delineated, for three levels (K–4, 5–8, and 9–12), a consensus on what students should know and be able to do and how that might best be demonstrated in the classroom. Other organizations soon followed NCTM's lead. The influence of the NCTM Standards is reflected in another useful resource for the identification of math content: an assessment framework for mathematics developed for the National Assessment of Educational Progress (NAEP) [1]. This document organizes the subject area into five sections, each section provided with up to a dozen statements presented as benchmark indicators; material is identified by the grade at which it should be introduced and when it should be assessed at both informal and formal levels.

In addition, NCTM has recently published *Assessment Standards for School Mathematics* (May 1995), which is organized around six standards that focus on important mathematics, enhanced learning, equity, openness, valid inferences, and coherence. The publication also provides guidelines on the use of assessments for different purposes such as to make instructional decisions, monitor student progress, evaluate student achievement, and evaluate programs.

Science

In science, three recent efforts contribute significantly to the development of standards. The National Committee on Science Education Standards and Assessment (NCSESA) issued the last publicly available draft of the *National Science Education Standards* in November 1994. The final document is scheduled to appear by the end of 1995. Material related directly to content standards fills 200 of the draft's 300-plus pages, while additional chapters address standards for science teaching and professional development, as well as assessment, program, and system standards. In the current draft, the science content standards are written for three levels: science for K–4 is described in 24 standards, grades 5–8 in 28 standards, and grades 9–12 in 34 standards.

The second effort within the field of science comes from the American Association for the Advancement of Science (AAAS). Working from the foundation they helped build in *Science for All Americans* (1992), AAAS's Project 2061 provides over 60 "literacy goals" in science as well as mathematics, technology and the social sciences. These goals are well articulated across levels K–2, 3–5, 6–8, and 9–12. This effort, published as *Benchmarks for Science Literacy* (1993), includes a useful discussion and presentation of the research base available to those who worked on the project.

In addition to these efforts, the National Science Teachers Association (NSTA) has published the *Scope, Sequence and Coordination of National Science Education Content Standards* (Aldridge, 1995) as an addendum to *The Content Core: A Guide for Curriculum Designers* (Pearsall, 1993). This supplement is designed to make the *Core* more consistent with the new standards. NSTA has also released *A High School Framework for National Science Education Standards* (Aldridge, 1995), developed under a grant from the National Science Foundation. Like the addendum to the Core, this framework builds directly from NCSESA's November 1994 draft of science standards. Essential generalizations in physics, chemistry, biology, Earth and space sciences, and other areas organize the framework. Each generalization is described in some detail with a list of the relevant concepts, empirical laws, and theories or models that students will need in order to acquire a solid grounding in the topic. These subsections are presented in grade sequence (9, 10–12) and include a recommended learning sequence.

The *California Science Framework* (1990) reflects indebtedness to the work done in *Science for All Americans*. Additionally, the *Framework* shows its influence in the standards work from NCSESA. However, since it is a curriculum framework rather than a standards document, it provides considerably more detail than found in the *Benchmarks* or in the NCSESA standards and seems to complement them both. The *Framework* presents the content of the physical, earth, and life sciences at four levels (K–2, 3–5, 6–8, 9–12) through what it calls the "major themes of science": energy, evolution, patterns of change, scale and structure, stability, and systems and interactions.

Finally, additional material on science in the schools is available from the National Assessment of Educational Progress in their *Science Objectives for 1990* and the Exercise *Specifications for 1994 NAEP.*

History

The History Standards Project, under the aegis of the National Center for History in the Schools (NCHS), has published three sets of standards: *National Standards for History K–4*, *National Standards for United States History*, and *National Standards for World History* (NCHS, 1995). Gary Nash, co-director of NCHS, which heads the history standards project, has indicated the standards may be under revision. Presumably, the efforts to revise the history standards are fueled by the recent controversy over their content ("History Standards," *Education Daily*, January 1995). A panel of historians, practitioners, and public figures, convened by the Council for Basic Education (CBE) to examine the history standards, has found that the "overwhelming majority of criticisms was targeted at the teaching examples in the documents, rather than at the actual standards for student achievement." ("Review panels," CBE, October 1995). In addition to the content standards, the three standards documents from NCHS share a treatment on Historical Thinking, which includes such standards as Chronological Thinking and Historical Comprehension.

Other useful resources are available or under development for the articulation of standards in a history curriculum. *Lessons From History: Essential Understandings and Historical Perspectives Students Should Acquire* (Crabtree, Nash, Gagnon, & Waugh, 1992) is a comprehensive description of K–12 history education; in fact, it was on the basis of this work that NCHS was funded to develop national standards. Another well-received guide, produced by the Bradley Commission on History in the Schools, is *Building a History Curriculum: Guidelines for Teaching History in the Schools* (1988). This document, which also appears as Chapter 2 in *Historical Literacy* (Gagnon, 1989), is more general in scope but does provide a focus on the historical perspective students should acquire in their study of history. A successor to the Bradley commission, The National Council for History Education, is currently developing four booklets with more specific guidelines on building a history curriculum. *Building a U.S. History Curriculum* is currently in draft; companion booklets in western civilization and world history will also appear in 1996, and a guide for history in the early grades will be available in 1997.

In addition to these resources, two documents are available from NAEP: a *Framework for the 1994 National Assessment of Educational Progress U.S. History Assessment* (not dated) and a set of *Provisional Item Specifications for U.S. History* (1992). As in other recent work from NAEP, the framework organizes its subject matter into themes such as: Change and Continuity in American Democracy, The Gathering and Interactions of Peoples, Cultures and Ideas, and The Changing Role of America in the World. The framework recommends some preliminary achievement levels (basic, proficient, and advanced) at 4th, 8th, and 12th grades. The descriptions are at a fairly general level. For example, an 8th-grade student at the basic level should, among other things, "have a beginning understanding of the fundamental political ideas and institutions of American life, and their historical origins" (p. 38). The Item Specifications, however, provide a greater level of detail in "defining questions," organized by theme, for students at the 4th, 8th, and 12th grade.

Language Arts

In the language arts, the Standards Project for the English Language Arts (SPELA) was initially funded by FIRST (the Fund for Improvement and Reform of Schools and Teaching) of the Office of Educational Research and Improvement. Beginning in September of 1992, SPELA was designed to be a three-year collaborative effort of the Center for the Study of Reading (CSR), the International Reading Association (IRA), and the National Council of Teachers of English (NCTE). SPELA produced one complete draft of its standards entitled *Incomplete Work of the Task Forces of the Standards Project for the English Language Arts*. That draft contained five strands (Reading/Literature, Writing, Language, Real World Literacy, and Interconnections), each listing two or three standards described at a general level. This draft was to go through a number of iterations until a final document was produced. However on March 18, 1994, the U.S. Department of Education notified SPELA that it would not continue funding for the project. According to NCTE, funding for the project was halted because of a number of "philosophical differences" between SPELA and the federal agencies. These differences included a disagreement over the inclusion of delivery standards, which was supported by SPELA, and the lack of attention to a specific canon of children's literature, which was not supported by SPELA. However, the primary reason for cessation of funding appears to be the federal government's assertion that SPELA was not attending to the basic task of identifying what students should know and be able to do in the English language arts. As noted by Janice Anderson, interim director of FIRST at the time funding was halted, SPELA had not made "substantial progress toward meeting the objectives" of the project. The proposed standards, she stated, "are vague and often read as opinions and platitudes," focus too much on process rather than content, and lack "a coherent conceptual framework" ("NCTE/ IRA Say Standards Effort Will Continue," *The Council Chronicle*, June 1994). Since then, NCTE and IRA have vowed to complete the project even without federal support. To date, that effort has produced an incomplete draft entitled *Standards for the English Language Arts* (NCTE, October 1995). That draft articulates eleven very general standards, but does not address benchmarks at different developmental levels. As in the case with the SPELA document, this later effort has met with criticism due to its lack of specificity. According to an article in *Education Daily*, the eleven standards the International Reading Association and the Nationala Council of Teachers of English (NCTE) are drafting "deliberately say little more than that students should be able to read a wide range of texts and write effectively using various strategies . . . The document elaborates on each standard, but doesn't break down specific competencies students should show at various grade levels, as do standards in other disciplines." *(Education Daily*, October 25, 1995, p. 1)

Although its efforts were not designed to produce standards per se, the National Assessment of Educational Progress has produced a number of documents that provide guidance as to the nature and format of English language arts standards. For example, the *Description of Writing Achievement Levels-Setting Process and Proposed Achievement Level Definitions* (NAEP, 1992) provides explicit descriptions of basic, proficient, and advanced performance in writing. These level descriptions can quite easily be translated into expectations about what students should know and be able to do in the area of composition. In the area of reading, the *Assessment and Exercise Specifications: NAEP Reading Consensus Project: 1992 NAEP Reading Assessment* (NAEP, 1990) not only provides a detailed description of what students should know and be able to do at various levels but it also details the types of materials students should be able to read.

Finally, a number of documents, although not very current, have provided implicit descriptions of the knowledge and skills important to the language arts. These include *The English Coalition Conference: Democracy through Language* (NCTE, 1989) *and Essentials of English: A Document for Reflection and Dialogue* (NCTE, 1982).

Geography

The Geography Education Standards Project has published *Geography for Life: National Geography Standards* (1994). The final standards document provides 18 standards articulated for grades K–4, 5–8, and 9–12. The standards are organized under six areas: The World in Spatial Terms, Places and Regions, Physical Systems, Human Systems, Environment and Society, and The Uses of Geography. At each grade level, a standard is defined by three to six activities, each of which is exemplified by three "learning opportunities," i.e., activities described at a greater level of detail. Certainly the most visually interesting of the standards documents, with numerous high-quality photographs and illustrations on glossy paper, it shows indebtedness to one of the co-developers on the project, the National Geographic Society.

The writing committee of the Standards Project, in addition to the consensus process, relied chiefly upon two sources for their material. The first, *Guidelines for Geographic Education* (Joint Committee on Geographic Education, 1984), provides an instructional framework for teaching and learning geography by structuring content around five themes: Location, Place, Human-Environmental Interaction, Movement, and Regions. The second, NAEP's *Geography Assessment Framework for the 1994 National Assessment of Educational Progress* (1992), uses material from the five themes to develop three content areas for assessment: Space and Place, Environment and Society, and Spatial Dynamics and Connections. The assessment framework recommends the development of questions that measure student cognitive abilities "at a basic Knowing level, a more complex Understanding level, and an Applying level that covers a broad range of thinking skills" (p. 3). This three-tiered approach, together with three content areas, forms a matrix within which essential assessment questions are developed.

In addition to these reports, another source for detailed information on geography comes from NAEP's *Item Specifications* (1992) for the 1994 Assessment. This document provides some detailed descriptions as to the basic, proficient, and advanced levels of achievement in geography. For example, "Eighth grade basic" means that students should be able to, among other things, " . . . solve fundamental locational questions using latitude and longitude; interpret simple map scales; identify continents, oceans, and selected countries and cities . . . "(p. 54). The Item Specifications provide greater levels of detail in terms of how cells in the NAEP matrix might be developed.

The Arts

Standards for the arts, prepared under a grant from the U.S. Department of Education, the National Endowment for the Arts, and the National Endowment for the Humanities, were published in 1994 by the Consortium of National Arts Education Associations. The design of the final document, *What Every Young American Should Know and Be Able to Do in the Arts*, has been greatly simplified over earlier drafts. Standards for dance, music, theatre, and the visual arts are organized into K–4, 5–8, and 9–12 grade clusters. Each field contains from six to nine content standards, articulated across all grade clusters. Within each grade cluster for a given content standard, several achievement standards are provided. For example, in the visual arts section, a content standard found within each grade range, "Understanding the visual arts in relation to history and cultures," has three achievement standards associated with it for the 5–8 level. One such achievement standard states, "Students know and compare the characteristics of art works in various eras and cultures."

In addition, NAEP, working closely with the authors of the national standards for the arts, has developed an *Arts Education Assessment Framework* (1994). For dance, music, theatre, and the visual arts, the framework describes the learning expected of students in (1) knowledge and understanding about the arts, and (2) perceptual, technical, expressive, and intellectual/reflective skills. The assessment framework is formed of a matrix in which the knowledge and skills for each discipline form one axis and the application of this knowledge and skill forms the other. Application in the arts is defined as students creating, performing, or responding to the arts.

Civics

The Center for Civic Education (CCE) has published *National Standards for Civics and Government* (1994). The standards are presented for K–4, 5–8 and 9–12; major areas organize some 70-plus content standards. Each content standard has associated with it a set of key concepts that students should know in order to meet the standard. The standards are organized into five areas: civic life, politics, and government; the foundations of the U.S. political system; the values and principles of U.S. constitutional democracy; the relationship of U.S. politics to world affairs; and the role of the citizen. Each area is presented as a question, and each of the five outermost questions (e.g., What is government and what should it do?) has more specific questions that organize the content standards beneath them (e.g., What are major ideas about the purposes of government and the role of law in society?). The CCE has also produced a source book of impressive scope and detail, *Civitas: A Framework for Civic Education* (Quigley & Bahmmeller, 1991), which contains more than 600 pages of information about civics.

Economics

The National Council on Economic Education (NCEE) convened a drafting committee on national standards in October 1995; the council reportedly anticipates an additional year before the standards are developed ("Economics group," *Report on Education Research*, October 25, 1995, p. 8). In April 1995, the Education Department determined not to provide grant money to assist the council in standards development, but NCEE continues with funding from private sources. An information packet, "Content Statements for State Standards in Economics," if taken as a model for the final document, indicates the council will provide 21 standards, with a range of five to eighteen elements per standard. Although the draft document does not assign grade levels for concepts, the final work will probably align closely with the structure provided in the most recent work from NCEE, *A Framework for Teaching Basic Economic Concepts with Scope and Sequence Guidelines*, K–12 (Saunders & Gilliard, 1995).

Foreign Language

A three-year project funded by a grant from the Department of Education and the National Endowment for the Humanities will result in the development of standards in foreign languages, with a projected completion date of 1996. A joint effort by the American Council on the Teaching of Foreign Languages (ACTFL) and a number of foreign language associations, the effort has thus far resulted in two widely disseminated drafts. The most recently available draft of the *National Standards for Foreign Language Education* (April 1995) organizes standards under five goal areas for students: communicate in languages other than English; gain knowledge and understanding of other cultures; connect with other disciplines and acquire information; develop insight into own language and culture; and participate in multilingual communities. Each goal contains from one to three standards, for a total of ten, which are articulated at three levels: K–4, 5–8, and 9–12. A rationale statement follows each goal and standard. Sample learning scenarios are provided for each goal by level.

Health

The Joint Health Education Standards Committee, funded by the American Cancer Society, recently published *National Health Education Standards: Achieving Health Literacy* (1995). The committee, housed at the Association for the Advancement of Health Education, has developed seven standards, each with rationale statements and "performance indicators" for students at grades K–4, 5–8, and 9–11. The material is organized both by standards and by grade levels. The work includes a set of "opportunity to learn" standards designed to provide direction for the policies, resources, and activities that should facilitate the implementation of the health education standards. In addition, a table is provided that maps the topics covered in the health standards to related adolescent risk behaviors.

Physical Education

The National Association for Sport and Physical Education (NASPE) has recently published *Moving into the Future: National Standards for Physical Education: A Guide to Content and Assessment* (1995). The report lists seven standards with benchmarks at grades K, 2, 4, 6, 8, 10, and 12. These grade-level descriptions of the standards include rationale statements, sample benchmarks, and assessment examples. The assessment examples are quite extensive, providing numerous ideas for student and group projects and student portfolios, all with suggested criteria for assessment. Standards from the self-funded group were based on NASPE's 1992 publication, *Outcomes of Quality Physical Education Programs.*

Social Studies

The National Council for the Social Studies (NCSS) has published *Expectations of Excellence: Curriculum Standards for Social Studies* (1994). As the title indicates, NCSS recognizes a distinction between content and curriculum, specifically, that the role of the social studies is to provide "overall curriculum design and comprehensive student performance expectations, while the individual discipline standards (civics and government, economics, geography, and history) provide focused and enhanced content detail" (p. viii). The document underscores this organizing role of curriculum standards through the elaboration of 10 "thematic strands" such as Culture, Time, Continuity and Change, and Individual Development and Identity. Each theme is provided with a list of student performance expectations and classroom activities appropriate for the early grades, middle grades, and high school. Across all 10 strands, 241 performance expectations are described. A useful appendix provides "essential skills for social studies," organized under the categories of acquiring information, organizing and using information, and interpersonal relationships and social participation. Each area is defined by goal statements and a "suggested strength of instructional effort" toward reaching those goals at levels K–3, 4–6, 7–9, and 10–12.

The World of Work

Progress is also being made in delineating the knowledge and skills students should have to be successful and productive in the world of work. The Secretary's Commission on Achieving Necessary Skills (SCANS) and the report the commission produced, *What Work Requires of Schools* (1991), has helped to focus efforts on standards that address higher-order thinking and reasoning skills, as well as personal traits and interpersonal skills that students should acquire. This document adds a strong voice to the call from other standards groups for greater attention to the development of students' critical thinking skills, their ability to communicate, and their ability to work in groups. The Department of Labor and the National Center for Education Statistics are currently engaged in a project to develop and administer SCANS measures by 1996. A complementary effort was undertaken by the American Society for Training and Development (ASTD), representing "50,000 practitioners, managers, administrators, educators and researchers in the field of human development" (Carnevale, Gainer, & Meltzer, 1990, p. xiii). An ASTD research team, funded through a grant underwritten by the Department of Labor, reviewed the literature and polled members to determine what skills were most desired by employers. The team identified 16 skill areas, including traditional academic areas such as reading, writing, and computation, as well as nontraditional areas such as interpersonal skills, self-esteem, and negotiation. Their findings were published in *Workplace Basics: The Essential Skills Employers Want* (Carnevale, Gainer & Meltzer, 1990).

As part of the response to this need for clarity in the description of knowledge and skills standards, the United States Departments of Education and Labor have initiated a public-private partnership to develop voluntary skill standards for various industries. In 1992 and 1993 these two departments funded 22 pilot projects (16 by the Department of Education and 6 by the Department of Labor) to develop voluntary skill standards covering 19 major industrial areas. The skill standards were slated for completion in 1995; work still remains to determine how information from these projects might be successfully articulated for K–12 schooling.

State-Level Efforts

Although state departments of education have long been involved in curriculum development efforts, the frameworks produced vary considerably by state in their purpose and intended audience. The authors of a few frameworks, such as those for math and science from California, seem to have anticipated the current standards effort. Recently, however, some states are moving deliberatively toward a standards-based view of curriculum development. In Colorado, for example, legislation for the establishment of standards-based education has resulted in the development and adoption of model standards for K–12 in the areas of reading, writing, mathematics, science, geography, and history. Work now continues toward the development of standards for physical education, music, visual arts, civics, economics, and foreign language. Those involved in the process include representatives from business, education agencies, and state K–16 educators, in addition to subject-area specialists.

In summary, there are a number of efforts underway to develop standards in a variety of subject areas. One can infer that if a school, district, or state is to design a schooling system based on standards, these many and varied efforts must be reconciled to some degree.

[1] NAEP ("the nation's report card"), a nationally representative assessment of student knowledge in various subject areas, is a congressionally mandated project of the National Center for Education Statistics, The U.S. Department of Education; NAEP's policy guidelines are formulated by the National Assessment Governing Board (NAGB).

3. Standards and Standardization

Section 1 alluded to the difficulties created by the wide variety of perspectives taken by various groups on the scope, purpose, and nature of standards. In order to develop an internally consistent model of standards and benchmarks, a number of issues must be reconciled. Here we consider six: (1) whether standards are for subject literacy or subject expertise, (2) whether thinking and reasoning skills can be described independent of content, (3) whether standards should be formed as content or performance standards, (4) whether standards should be content or curriculum standards, (5) how benchmarks are defined, and (6) at what level of generality benchmarks and standards are stated. The model proposed here adopts a perspective on each.

1. The Literacy versus Expertise Issue

Some groups, such as the National Council of Teachers of Mathematics (NCTM), have developed standards using what might be called a "literacy" model. Such standards serve to ensure that students have a basic understanding of the fundamental knowledge and skills in mathematics that an educated, literate adult should know and be able to make use of. An indication that NCTM makes such a distinction can be seen in the standards the council identifies separately for "the college-intending student." These standards appear to describe knowledge and skills important primarily for those in pursuit of advanced studies in math and science.

For example, in its document *Curriculum and Evaluation Standards for School Mathematics*, NCTM singles out the following as applicable to students seeking to pursue mathematics at a post-secondary level:

- apply the sine and cosine functions to problem situations
- investigate limiting processes by examining infinite sequences, series and areas under a curve
- analyze graphs of polynomial, rational, radical and transcendental functions

A different view is available from the subject area of science. Project 2061 does not provide "expert" standards for students bound for advanced study. In fact, the title of the Project's work, *Benchmarks for Science Literacy*, suggests that a distinction is to be made between knowledge that literate adults should possess and knowledge that is primarily of use to those who plan to do advanced study in the field of science. This accords with another view of science literacy that science is clearly different from *using* science; scientific literacy concerns only the latter." (Hazen & Trefil, 1993) [italics, the authors']. This does not mean, of course, that students should not engage in hands-on science; it merely suggests that there are distinctions that can be made between preparations for understanding science as an educated adult and doing basic science as an adult professional.

The differences between academic and literacy models presented in the various documents do not, on close analysis, constitute an insurmountable problem. At the literacy end of the continuum, standards might be described as the minimum requirements of knowledge and skill students should know and be able to do to function well as adults of the 21st century. At the "expertise" end of the continuum, standards are described in terms of the knowledge and skills that, once acquired, would render students "mini-experts" in every field. In fact, as currently articulated in the documents reviewed for this effort, both positions have strong tendencies toward the middle. That is, those documents that provide what might be characterized as literacy standards commonly include material that goes beyond minimum requirements for basic literacy within a domain. Additionally, those documents that appear to favor the expertise position frequently are structured in such a way that the "expert-level" detail provided beneath a standard does not obscure the basic point of the standard itself, which focuses on information at a literacy level.

If one had to classify the model adopted in this report, it would be most accurately described as a literacy approach to content, in that it is believed that standards and benchmarks should be considered essential for all students, whether they enter the world of work directly from high school or go on to higher education.

2. The Role of Thinking and Reasoning

Virtually all of the documents reviewed for this study either implicitly or explicitly acknowledged the importance of emphasizing thinking and reasoning in the articulation of standards. This is not surprising given the historical emphasis educators have placed on thinking and reasoning. Over 70 years ago, John Dewey (1916) wrote, "The sole direct path to enduring improvement in the methods of instruction and learning consists of centering upon the conditions which exact, promote and test thinking." Similarly, in 1961, the National Education Association identified the improvement of thinking and reasoning as central to American education:

> . . . in the general area of the development of the ability to think, there is a field for new research of the greatest importance. It is essential that those who have responsibility for management and policy determination in education commit themselves to expansion of such research and to the application of the fruits of this research. This is the context in which the significant answers to such issues as educational technology, length of the school year and content of teacher education must be sought and given. (Educational Policies Commission, 1961, pp. 14–15)

More recently, calls for the enhancement of thinking and reasoning in American education have come from the National Science Board Commission on Pre-college Education in Mathematics, Science and Technology (1983), the College Board (1987), the National Education Association (Futrell, 1987), and the American Federation of Teachers (1985).

Although there is agreement as to the importance of enhancing thinking and reasoning, there is not much agreement on the manner in which thinking and reasoning should be articulated in standards. There were three principal ways that thinking and reasoning skills were addressed in the documents reviewed for this report. One approach was to establish a set of standards on generic reasoning. For example, the document *Workplace Basics: The Essential Skills Employers Want* (Carnevale, Gainer, & Meltzer, 1991) identifies Creative Thinking as one of the 16 skills that are important to the workplace. Thinking skills identified in this manner are stated as generic mental processes that cut across all content areas. A second approach can be found reflected in the NCTM's *Curriculum and Evaluation Standards,* which articulates a standard entitled Mathematical Reasoning. Within this category, those reasoning processes presumed to be specific to mathematics, but useful within the various subdisciplines of mathematics, are identified. Finally, the third perspective is exemplified by a draft of the *National Geography Standards* (June 1993), which describes performance standards. Here no set of standards nor any one specific standard addresses thinking and reasoning. Rather, the performances are described in such a way as to embed thinking and reasoning processes. To illustrate, consider the following standard, which makes explicit the need to both evaluate information and solve problems, both important reasoning processes:

- The student can evaluate the related merits of maps, globes and other geographic tools to solve problems. (p. 5)

A cursory review of the literature in cognitive psychology would seem to favor the latter two positions concerning an approach to thinking and reasoning skills. That is, strong arguments have been made against the isolation of thinking and reasoning skills (Glaser, 1984; Resnick, 1987). However, it is important to note that these arguments focus upon instruction not upon the identification of standards. The case has been well articulated that thinking and reasoning should not be taught in isolation of specific content. Quite obviously, one cannot think about nothing. Thinking and reasoning processes and strategies must be employed with content, and to use any content other than that important to specific disciplines makes little sense. However, articulating standards is quite another matter. As described in this study, one of the primary purposes of standards is to provide educators with direction about the skills and abilities that should be the focus of instruction and assessment. Yet, if important thinking approaches are only found embedded in content, there can be no way to ensure that students have explored content in as many thoughtful ways as possible. To illustrate, consider the following performance standard from the draft document of the *National Geography Standards:*

- The student can make and defend reasoned decisions on the location of a variety of activities within the home or community. (p. 11)

This performance standard describes one way in which a student might demonstrate knowledge of a content standard in geography. The important knowledge within the performance standard, however, could be demonstrated in a variety of different ways: for example, the student could be asked to predict where types of activities might be located in a new community. In any case, once the knowledge has been identified as important, it can be addressed in a number of different ways. But what of the ability to make and defend a decision based on knowledge of geography? If the ability is considered important enough that a student should be able to apply decision making to issues in geography, then decision making should be identified and addressed as systematically as the content rather than as an incidental part of a performance standard in geography. Otherwise, whether a student uses decision making or not will be determined by the luck of the draw-only if he or she is asked to meet this particular performance standard or another performance standard that happens to require this skill. Clearly, such a hit-or-miss approach will characterize any effort that does not fully articulate and address the thinking and reasoning skills that should be brought to the study of content.

The second approach found in the various national reports also proved problematic. Many of the thinking and reasoning skills and abilities identified within those standards that purported to focus on content-specific skills and abilities were, in fact, quite general. For example, the NCTM standard of mathematical reasoning primarily specifies such general thinking and reasoning abilities as making conjectures, making inferences, and making corrections.

Finally, we found considerable redundancy in the thinking and reasoning skills and abilities implicitly and explicitly identified in the various documents. In effect, all the discipline areas not only emphasized thinking and reasoning skills and abilities, they generally identified the same skills and abilities. Given the intent of this report to capitalize on redundancies, and propelled by the problems described above, we have aggregated the various elements of thinking and reasoning into a dedicated set of standards. Our method of reporting, however, should not be misconstrued as a mandate or even a suggestion that thinking and reasoning should be taught in isolation of domain-specific knowledge and skill.

3. Content or Performance Standards?

One of the significant distinctions within developing models of standards-based education is that between content and performance standards. Some theorists describe standards in terms of knowledge and skill that should be acquired. This is the content position. For example, Albert Shanker (1992), president of the American Federation of Teachers, defines a standard as "what we want students to know and be able to do as a result of their education" (p. S11). For Shanker, identifying a standard involves identifying specific information or skills that should be mastered to gain expertise in a given domain. Former Assistant Secretary of Education Diane Ravitch also describes standards from an information and skills perspective (Ravitch, 1992). Conversely, in his early writings on standards, Grant Wiggins, a nationally known expert on performance assessment, defined standards more in performance terms. For Wiggins, standards should be stated in terms of real-world, highly robust tasks that ideally elicit or require the important knowledge and skills in various content domains. This emphasis on performance as the critical feature of a standard is also shared by psychologist and researcher Richard Shavelson and his colleagues who state that standards should be "based on students' performance of concrete, meaningful tasks" (Shavelson, Baxter, & Pine, 1992, p. 22).

Since these earlier discussions, which seemed to pit one form against the other, clearer distinctions have been made and the two positions have been reconciled. The distinction between content standards and performance standards was perhaps formalized and legitimized in the 1993 report to the National Education Goals Panel by the National Education Standards and Improvement Council (NESIC). Commonly referred to as the "Malcom Report" in deference to Shirley M. Malcom, Chair of the Goals 3 and 4 Standards Review Technical Planning Group, the report makes a clear distinction between content standards and performance standards and establishes the validity of both:

> Content standards specify "what students should know and be able to do." They indicate the knowledge and skills—the ways of thinking, working, communicating, reasoning, and investigating, and the most important and enduring ideas, concepts, issues, dilemmas, and knowledge essential to the discipline—that should be taught and learned in school. (p. ii)
>
> Performance standards specify "how good is good enough." They relate to issues of assessment that gauge the degree to which content standards have been attained. While others use the term differently, in this report "performance standards" are not the skills, modes of reasoning, and habits mentioned above [in the description of content standards] that assessments attempt to measure. Instead, they are the indices of quality that specify how adept or competent a student demonstration must be. A performance standard indicates both the **nature of the evidence** (such as an essay, mathematical, proof, scientific experiment, project, exam, or combination of these) required to demonstrate that the content standard has been met and the **quality of student performance** that will be deemed acceptable (that merits a passing or "A" grade). (p. iii)

Performance standards, then, "contextualize" content standards by identifying the manner in which they must be demonstrated and the expected level of performance or understanding. In effect, performance standards are an interpretation of content standards. Both types of standards are, in fact, necessary. Their interdependence is explicitly referenced in the Malcom Report: "The Technical Planning Group believes that performance standards are essential to gauging whether content standards are met" (p. iii). Additionally, reports from the National Academy of Education Panel on the Evaluation of the NAEP Trial State Assessment (Shepard, 1993) and the National Council on Education Standards and Testing (NCEST, 1992) attest to the importance of both types of standards. In effect, then, content standards and performance standards are two interdependent and necessary components of an effective system of standards. As noted by Marc Tucker (1992), Co-director of the New Standards Project:

> You can't assess kids' performance unless you give them the tasks, and you can't assess their degree of achievement unless they actually perform the tasks.
>
> But first you must be clear about what you want kids to know and be able to do, or what we call "content standards." Those content standards become the target for creating the assessment. (p. S3)

In spite of the rather clear-cut distinction between content standards and performance standards, there is still a great deal of confusion as to the format and level of generality of performance standards. From Marc Tucker's comments above, one might conclude that a performance standard is a specific task. Additionally, the description of performance standards in the Malcom Report could be interpreted as an assertion that performance standards should be stated as fairly specific tasks. Yet, performance standards are frequently articulated in relatively general terms. To illustrate, consider the following performance standards described by the National Assessment Governing Board (NAGB):

> **Basic:** Denotes partial mastery of the knowledge and skills that are fundamental for proficient work at each grade-4, 8, and 12. For 12th, this is higher than minimum competency skills (which normally are taught in elementary and junior high schools) and covers significant elements of standard high-school-level work.
>
> **Proficient:** Represents solid academic performance for each grade tested-4, 8 and 12-and reflects a consensus that students reaching such a level have demonstrated competency over challenging subject matter and are well prepared for the next level of schooling. At grade 12, the proficient level will encompass a body of subject-matter knowledge and analytical skills, of cultural literacy and insight, that all high school graduates should have for democratic citizenship, responsible adulthood, and productive work.
>
> **Advanced:** Signifies superior performance beyond proficient grade-level mastery at grades 4, 8, and 12. For 12th grade, the advanced level shows readiness for rigorous college courses, advanced technical training, or employment requiring advanced academic achievement. As data become available, it may be based in part on international comparisons of academic achievement and may also be related to Advanced Placement and other college placement exams. (in Shepard, 1993, p. 12)

This general description of performance levels was then translated by NAEP into more detailed descriptions for specific content areas at specific grade levels. For example, figure 3.1 contains an example of the performance levels set by NAEP for mathematics at grade 8:

These performance levels were then translated into specific items, and a system referred to as the Angoff method was used to determine how many items must be answered correctly to indicate specific levels of performance. In effect, then, the illustrations from NAGB and NAEP represent a continuum of levels of generality for stating performance standards. At

Figure 3.1

BASIC	Eighth-grade students performing at the basic level should exhibit evidence of conceptual and procedural understanding in the five NAEP content areas [for mathematics]. This level of performance signifies an understanding of arithmetic operations—including estimation on whole numbers, decimals, fractions and percents. Eighth graders performing at the basic level should complete problems correctly with the help of structural prompts such as diagrams, charts and graphs. They should be able to solve problems in all NAEP content areas through the appropriate selection and use of strategies and technological tools – including calculators, computers, and geometric shapes. Students at this level also should be able to use fundamental algebraic and informal geometric concepts in problem solving. As they approach the proficient level, students at the basic level should be able to determine which of the available data are necessary and sufficient for correct solutions and use them in problem solving. However, these eighth graders show limited skill in communicating mathematically.
PROFICIENT	Eighth-grade students performing at the proficient level should apply mathematical concepts and procedures consistently to complex problems in the five NAEP content areas. Eighth graders performing at the proficient level should be able to conjecture, defend their ideas, and five supporting examples. They should understand the connections between fractions, percents, decimals, and other mathematical topics such as algebra and functions. Students at this level are expected to have a thorough understanding of basic level arithmetic operations—an understanding sufficient for problem solving in practical situations. Quantity and spatial relationships in problem solving and reasoning should be familiar to them, and they should be able to convey underlying reasoning skills beyond the level of arithmetic. They should be able to compare and contrast mathematical ideas and generate their own examples. These students should make inferences from data and graphs, apply properties of informal geometry, and accurately use the tools of technology. Students at this level should understand the process of gathering and organizing data and be able to calculate, evaluate, and communicate results within the domain of statistics and probability.
ADVANCED	Eighth-grade students performing at the advanced level should be able to reach beyond the recognition, identification, and application of mathematical rules in order to generalize and synthesize concepts and principals in the five NAEP content areas. Eighth graders performing at the advanced level should be able to probe examples and counterexamples in order to shape generalizations from which they can develop models. Eighth graders performing at the advanced level should use number sense and geometric awareness to consider the reasonableness of an answer. They are expected to use abstract thinking to create unique problem-solving techniques and explain the reasoning processes underlying their conclusions. (in Shepard, p.35)

one end of the continuum, performance standards are stated in such general terms that they can apply to any and all content areas. At the other end of the continuum, performance standards are articulated in terms of a specific number and type of items that must be answered correctly. Clearly, a great deal of conceptual work remains before the term "performance standard" has a well-articulated meaning. For this reason, we have limited the work of this study to the identification of content standards, all the while recognizing the importance of a complementary set of performance standards.

Another reason for limiting the scope of this study to content standards is the necessary relationship content standards have with performance standards. That is, sound content standards are a necessary but not sufficient condition for sound performance standards. Indeed, the NAEP efforts at setting performance standards have been criticized because they allegedly were not based on sound content standards. As Shepard (1993) notes:

> Current NAEP item pools, particularly at the advanced level, are not sufficiently congruent with emerging national content standards. Therefore, the achievement-level descriptions cannot adequately represent ideal future-oriented standards without departing from the assessment that the students actually took. In addition, some exemplar items were judged by content experts to be less than exemplary. They do not communicate subject-matter standards well. (p. xiii)

In fact, Shepard implies that NAEP should curtail its efforts to set performance standards until content standards are well articulated: "Thus it only makes sense to wait until national content standards are available and then to follow a more coherent process for developing performance standards in conjunction with content standards" (p. xxv). Again, given the developing nature of performance standards and their dependence on well-articulated content standards, we have chosen to focus our efforts on identifying content standards only.

4. Content Standards or Curriculum Standards?

A distinction that should be made in the types of standards various groups are identifying is that between content standards and curriculum standards. Content standards describe what a student should know and be able to do. Curriculum standards (sometimes referred to as program standards) are best characterized as descriptions of what should take place in the classroom; as such, they address instructional techniques, recommended activities, and various modes of presentation. The difference between a content and curriculum standard is illustrated by the following two statements from the National Council of Teachers of Mathematics (1989) framework. Within that document, both statements are presented as standards:

a) recognize when an estimate is appropriate

b) describe, model, draw and classify shapes

Standard *a* describes a skill or ability a person might use solving a "day-to-day" or academic problem. For example, in day-to-day life, a person might use the skill of estimation to anticipate how much a proposed project might cost; or in a mathematics class, a student might use his estimation skills to determine that a problem can be solved without additional, unnecessary steps. In short, estimation is a skill that is commonly used or applied to solve common day-to-day problems or accomplish goals in academic settings. Standard *b*, "describe, model, draw and classify shapes," does not share this characteristic. That is, it is difficult to imagine many situations that would demand the skill of being able to model, draw, or classify shapes, whether to solve an academic or day-to-day problem. Rather, this kind of activity seems appropriate as an instructional device to help students understand shapes or to provide a way for them to demonstrate their understanding of shapes. Standards like *a* above are referred to as content standards because they describe information or skill that is essential to the practice or application of a content domain. Standards like b are referred to as curriculum standards because they identify the instructional or curricular activities that might be used to help students develop skill and ability within a content domain. It might be said that curriculum standards describe the methods designed to help students achieve content standards.

This project has content standards as its focus. There are two overarching reasons for this choice. First, content standards describe the goals for individual student achievement, whereas curriculum standards provide information that is ancillary to reaching those goals [1]. Second, curriculum standards, which usually focus on activities, projects, or techniques, if interpreted rigidly could leave teachers with little or no room for instructional diversity. That is, if teachers or administrators interpret curriculum standards as activities that must be performed, then teaching goals can too easily be equated with the activities performed, and actual student achievement loses its primary focus. When such a prescriptive attitude is taken toward activities, such activities often prove inefficient and time-consuming, leaving little room for experimentation and the refinement of new approaches to teaching.

Given the content (as opposed to curricular) orientation of this project, the standards identified will have the characteristics of content-area knowledge. Specifically, the information that comprises standards identified within this project will generally fall into three broad categories representing the three general types of knowledge. At a basic level, knowledge within any domain can be organized into the categories exemplified in figure 3.2.

The first column contains examples of knowledge that involves processes. These processes may or may not be performed in a linear fashion. For example, performing long division is a process: you perform one step, then another, and so on. Reading a map also involves certain steps, but these steps, unlike those in long division, do not have to be performed in any set order. You might read the name of the map first, then look at the legend, or you might just as effectively perform these steps in reverse order. Knowledge of this sort is usually called **procedural knowledge.** One might think of such knowledge as composed of the **skills and processes** important to a given content area.

Figure 3.2

PROCEDURAL	DECLARATIVE	CONTEXTUAL
reading a map	democracy	know when to use a map instead of a globe
performing long division	a numerator	model numbers using number lines
setting up an experiment	An amoeba	classify organisms
shooting a free throw	rules of basketball	know when to use man-to-man vs. zone coverage
editing an essay	conventions of	use appropriate tone and style punctuation for a selected audience

The examples in the second column do not involve a process or a set of steps. Acquiring this type of knowledge involves understanding the component parts. For example, knowledge of the concept of "democracy" includes understanding that decisions are made by the people, that each person has a single vote, that votes are weighted equally, and so on. This type of knowledge is commonly called **declarative knowledge**. One might think of such knowledge as composed of the **information** important to a given content area.

The last column contains items that are not simply declarative or procedural but specify knowledge in context. Column three contains examples of information and/or skills that have particular meaning because of the conditions that form part of their description. "To classify" is a skill; to understand the characteristics of organisms is declarative knowledge, or information; but knowledge of how to classify organisms is knowledge of a particular type: it requires understanding how particular characteristics establish relationships among organisms. Like the declarative/procedural distinction, this contextual knowledge is basic a "piece" that cannot be further reduced without loss of important information. Also, like declarative and procedural knowledge, it reflects a kind of knowing that is primarily useful in the service of some larger goal. In the case of procedural knowledge, for example, the ability to read a map is not useful in itself but does help when one needs to get somewhere. Similarly, declarative knowledge can prove useful when that knowledge helps in making inferences, decisions, and the like.

Understanding the concept "democracy" is not **in itself** useful (excluding knowledge for its own sake or for so-called "academic" exercises, such as asking whether the concept has been accurately defined). It is, however, useful in the service of some larger goal, as for example, determining whether activities within a country represent the democratic process. Similarly, contextual knowledge, of itself, has limited usefulness in that it does not describe a purposeful task, but its successful use may be essential for reaching a meaningful goal. A student may know the uses of a map and the uses of a globe, but in order to solve a distance-measuring problem, the student should know the criteria for selecting between a map and a globe. This knowledge is different from simply knowing the uses of a map or of a globe (exclusively): it is knowledge about the context in which the use of one tool is more appropriate than the use of another.

5. How Benchmarks are Defined

Regardless of their position on standards, most groups acknowledge the need to identify expected or anticipated skill or understanding at various developmental levels. These statements of expected knowledge and skill are referred to as benchmarks. To illustrate, consider the following content standards within science:

- Understands basic concepts about the structure and properties of matter

  At the 12th-grade level, the benchmark or expected level of understanding might be described in the following way:

  Knows that atoms interact with one another by transferring or sharing electrons that are furthest from the nucleus; these outer electrons govern the chemical properties of the element

  At the 8th-grade level, the benchmark or expected level of understanding might be:

  Knows that atoms in solids are close together, and don't move about easily; in liquids, *atoms are close together and stick to each other, but move about easily; atoms in gas are quite far apart and move about freely*

Theoretically, these benchmarks, or subcomponents of a standard, could be identified at all grade levels. However, the trend seems to be toward developing benchmarks at a few key levels. For example, the National Assessment of Educational Progress (NAEP) identifies benchmarks at grades 4, 8, and 12. The American Association for the Advancement of Science (Project 2061) identifies benchmarks at grades 2, 5, 8, and 12. In this model, benchmarks identify expected understanding or skill at various grade levels, with a preference for articulating benchmarks at primary, upper elementary, middle, and high school within each standard. However, these levels are significantly different in some content areas, depending entirely on the availability of source materials.

6. Levels of Generality

The Benchmark

The benchmark is the smallest unit of analysis for this study. As described above, it can be characterized as being declarative, procedural, or contextual in the type of knowledge it describes. The "size" of a benchmark is more problematic and is best described, at this point in our study, in practical rather than theoretical terms. A practical description begins from what appears to be common among the benchmarks that we have identified within the subject areas.

From our observations, a benchmark seems to have a lower and an upper limit. As to the lower limit, in no case does it appear to describe specifics of knowledge or specific skills that an average student could master quickly, assuming that the benchmark has been placed at the appropriate grade level. This lower limit means that a declarative benchmark would never be equivalent to a short list of facts, for example, nor would a two-step algorithm be identified as a procedural benchmark at the 4th-grade level. This provides a rough starting point for the lower level of a benchmark.

A useful reference point for a benchmark, particularly at the lower end of the interval, is the behavorial objective. A benchmark is "larger" than a behavioral objective. Mager (1962) described what came to be called a behavorial objective as consisting of three key elements: a target behavior, a description of conditions under which the behavior is demonstrated, and criteria for acceptable performance. By limiting the description of knowledge and skill to a behavior and to the conditions under which that behavior is demonstrated, this approach necessarily required many, many thousands of behavioral objectives to describe the knowledge within a given content domain. Benchmarks, by contrast, do not describe the behavior of students who meet an objective, nor do they narrow the description of knowledge and skills to a particular set of conditions. (A contextual benchmark, discussed above, is a special case. It describes a general context for knowledge use but not the conditions under which that knowledge could or should be demonstrated).

Thus, a single behavioral objective could not cover a benchmark, but a single benchmark could be the source of a number of instructional objectives. This characteristic of benchmarks, at least as they appear in this report, is in part explained by the fact that the articulation of standards and benchmarks is not an attempt to organize learning or learning activities within a model for instruction. Rather, this approach uses a cognitive theory of knowledge types to assist in the analysis and identification of knowledge and skills [2]. At the lower limit, then, a benchmark does not prescribe instructional objectives. That is, as said of the NCTM standards in a report from the National Academy of Education Panel (Shepard, 1993), they "do not delineate specific instructional activities, [but] they do set the direction for what should be taught" (p. 3).

In summary, a benchmark can be described as an "interval" of levels of generality in the description of knowledge and skills. In this section, we have attempted to describe some of the characteristics of the lower end of that interval. Benchmarks do not describe trivial or "easy" knowledge and skills for the developmental level at which they are found. They are not descriptions of knowledge and skill that have been narrowed through behavioral objectives or by a translation into an instructional activity.

The Standard

Where the lower bounds of a benchmark have some identifiable characteristics, the characteristics of the upper bound are much more vague. That is, within this study it became difficult to determine the point at which the component of a standard seemed too broad in scope or too generally stated to be characterized as a benchmark. In fact, at the next broader level of generality, we found that depending upon the document we analyzed, this level was either treated as a topic organizer or identified as a complete standard. The national history standards documents from NCHS were found to have at least four tiers of organization. In the design for the world history standards, for example, historical eras provided the most general structure. The level just beneath eras was identified as the standard level. Beneath the standard level there was no detailed information, but three or four more specific statements were given, under which benchmark-level information was provided.

The subject area of science offers a convenient example of the variance in approaches to levels of generality, inasmuch as two organizations have recently put considerable effort into the development of science standards, each using a different organizational scheme. Project 2061's *Benchmarks for Science Literacy* (1993) articulates most standards (termed Literacy Goals) across K–12. In practice, this means that a standard is described at a level that is broad enough to be articulated with benchmarks at each of four developmental levels: K–2; 3–5, 6–8, and 9–12. For example, one standard, or literacy goal, is on "the structure of matter." This idea is expressed at the earliest developmental level in terms such as the following:

- By the end of 2nd grade, students should know that:

  Objects can be described in terms of the materials they are made of (clay, cloth, paper, etc.) and their physical properties (color, size, shape, weight, texture, flexibility, etc.). (p. 76)

At the upper level, 9–12, a sample benchmark under the same overarching idea is:

- By the end of 12th grade, students should know that:

  The configuration of atoms in a molecule determines the molecule's properties. Shapes are particularly important in how large molecules interact with others. (p. 78)

Contrasting material comes from the National Committee on Science Education Standards and Assessment (NCSESA), which has been funded by the Department of Education to develop standards for science. If we search for an idea similar to the one found at the early grades in the *Benchmarks,* we find it in the following, which is identified as a content standard:

- As a result of the activities in grades K–4, all students should develop an understanding of:
    - Properties of objects and materials
    - Position and motion of objects
    - Light, heat, electricity, and magnetism

Concepts related to these topics, or subcomponents, are elaborated under a heading "fundamental ideas that underlie this standard." At that level, the following description is found for "Properties of objects and materials":

- Objects are many observable properties, including size, weight, shape, color, temperature, and the ability to react with other substances (p. V–25).

This demonstrates a dramatically different way of organizing very similar information. In this document, the standard has several organizing topics, each of which is defined at a greater level of detail. These details describe knowledge and skills at about the same level as found in the benchmarks from Project 2061's *Benchmarks.* The benchmark information differs essentially in two ways: in the NCSESA document, benchmarks appear in a standard that is complete at grade level, rather than articulated across grades; and these benchmarks also appear arranged under topic headings.

Although the categories differ, the same or very similar material is covered. For example, the corollary to the 12th-grade benchmark from Project 2061 on the structure of molecules (see example above) can be found in the NCSESA document as part of a different standard, which has six organizing subcomponents (p. V–130), under one of which ("structure and properties of matter") the following information can be found:

- The properties of compounds reflect the nature of the interactions among its molecules, which are determined by the structure of the molecule (the kinds of atoms and the distances and angles between them). (p. V–134, V–135)

In short, NCSESA has determined that standards should be categories of information not broad enough so that they encompass a common set of information across K–12. This articulation does appear, however, at the next larger level of organization. That is, all the benchmark information presented in the examples above from the NCSESA draft appears organized under the rubric Physical Science.

In this study, wherever possible, we describe standards at a level of generality that is broad enough to allow the articulation of benchmarks across K–12. Sometimes this approach required the reorganization of material from the subject-area documents. However, this organization was considered advantageous in that it organized knowledge and skills systematically across subject areas without any apparent loss of critical information. In addition, as mentioned at the outset (see Section 1), this consistency of format provides a clearer system-wide picture for those who wish to integrate benchmarks from different subject areas, but who also need to keep track of how and what curriculum they have addressed.

Summary

Standards, as found in the documents analyzed for this study, appeared at different levels of organization and structure. Standards provide a way of organizing information, that is, the benchmarks that identify important declarative, procedural, and contextual knowledge. This organization itself may provide information on how "pieces" of knowledge can be sequenced, logically or psychologically, for students' ease of learning. In this report, the standards we have developed reflect both the character of the draft materials available to us and the model we have developed for identifying knowledge. There are other ways that benchmarks can be grouped, however, and except for the caution that developmentally sequenced information should not be lost, there appears no compelling reason why districts or schools should not feel free to organize benchmarks in whatever way they find most useful.

[1] The NCTM standards clearly show the value of curriculum standards. It is hoped that similar efforts will be undertaken in the other subject areas, once content standards are made available.

[2] This process has been applied to documents, however, that have been developed by educators with understanding or belief about knowledge structures within their subject areas as well as what research says about the proper sequencing for the development of particular knowledge and skills. Clearly, then, the documents we have analyzed could well reflect the influence of certain theories of learning or theories of instruction. When this information (e.g., the sequence for learning about computation across K–12) is preserved in this study, it is better understood as a useful "side-effect" of our method, not a result of it.

Implementation Issues

There are a number of ways that this document can be used. Before describing them, we must underscore the freedom that users of this document should feel to generate their own standards using ours as a reference point. This report was generated from basic assumptions and from a particular view of knowledge that we hope have been well-defined for the reader. Other assumptions and other views of knowledge would, no doubt, have produced a very different articulation and organization of standards. Consequently, a school or district should feel free to extract benchmarks from our standards and organize them into other standards more consistent with their assumptions and perspective of knowledge.

Before using this document, a school or district should make some fundamental decisions and address some basic issues. In this section, we consider five important questions that a school or district should address before it adopts a standards-based approach to schooling.

1. In what format will benchmarks be articulated?

One fundamental question that should be addressed as early as possible is the format in which benchmarks will be articulated. There are two basic formats a school or district might use: (1) as lists of declarative, procedural and contextual knowledge, and (2) as knowledge application tasks. One approach to defining benchmarks is as leveled sets of declarative, procedural, and contextual knowledge. Clearly, this is the approach we have taken in this document.

Consequently, a school or district that wishes to take this approach could simply select the standards from our listing and the benchmarks within those selected standards. However, quite a different approach is to state benchmarks as knowledge application tasks. If a school or district wished to state benchmarks as knowledge application tasks, it would use the declarative, procedural, and contextual benchmarks in our report to construct their more task-or application-oriented benchmarks. For example, consider the following Level II benchmarks from one of the standards in science:

- Knows that things that give off light often also give off heat

- Knows that mechanical and electrical machines give off heat
- Knows that heat can move from one object to another by conduction
- Knows that some materials conduct heat better than others; materials that do not conduct heat well can reduce heat loss
- Knows that electrical circuits require a complete loop through which the electrical current can pass

Each of these might be used to construct explicit knowledge application tasks. For example, the first and fourth benchmarks might be translated into a knowledge application task in which students are presented with a specific situation where pairs of objects of different temperature-some warm and some cool-are placed in direct contact. Additionally, the paired objects would be made of materials of varying properties of conductivity. Some would be made of materials that are good conductors of heat; others would be made of materials that are poor conductors of heat. Students would be asked to hypothesize what changes in temperature would occur within each of the objects and explain the rationale underlying their answer. They might also be asked to test the accuracy of their prediction in light of the observed results and to describe alternative explanations for the results.

The benefit of constructing knowledge application tasks such as this is that they commonly include more than one benchmark. The proximity experiment, for example, involves two benchmarks from our original set. Additionally this knowledge application task can be used to determine student skill and ability in the thinking and reasoning standard, "Understands and applies basic principles of hypothesis testing and scientific inquiry":

- Makes and validates conjectures about outcomes of specific alternatives or events regarding an experiment

In short, articulating benchmarks as knowledge application tasks allows for the combining of information. As a way of using the elements of identified knowledge and skills, this combining can provide teachers with a powerful way of approaching content. However, articulating benchmarks as knowledge application tasks also presents some significant problems.

One of the most troublesome features of knowledge application tasks is that they are rarely transparent as to the knowledge and skill required for their completion. To illustrate, consider Grant Wiggins's intriguing knowledge application task of calculating the cost of a shower (Wiggins, 1993, p. 205). To ask students to determine the cost of a shower is an excellent real-world application of knowledge. However, if this task were used as an explicit benchmark, it would not be immediately evident what declarative, procedural, or contextual knowledge the task was designed to assess. From surface appearance, it would seem that an understanding of the British Thermal Unit (BTU) is the declarative knowledge critical to the "shower" task. However, without explicit guidance one must make a calculated guess that this is the critical knowledge intended as the focus of the task. Conversely, if knowledge of the BTU is explicitly stated as a benchmark, there are any number of tasks (including the shower task) that one could devise to confirm whether students grasp the central feature of the BTU.

Another problem inherent in stating benchmarks as knowledge application tasks is that they impose a rather rigid set of expectations on what will occur in classrooms. Thus, students are required to perform those tasks as evidence of their knowledge and skill in the benchmarks. In effect, teachers have no options as to how they will gain information about students' performance on the benchmarks when, in fact, many options might be available such as traditional forms of tests (e.g., essay tests, multiple choice, matching). Benchmarks as knowledge application tasks, then, have the same disadvantages as curriculum standards—they leave little room for divergence and experimentation in the classroom and mandate time-consuming activities.

2. How many standards and benchmarks will be articulated?

In all, this report, still to be updated, already lists 201 standards and 3,291 benchmarks for implementation in K–12 schooling. Clearly, a school or district could not expect a student to demonstrate competence in all of these (although they may be a part of instruction); sheer numbers would make such a system untenable. Given that there are 180 days in the school year and 13 years of schooling (assuming students go to kindergarten), there are only 2,340 school days available to students. If all benchmarks in this report were addressed, this would mean that students would have to learn and demonstrate mastery in one or more benchmarks every school day, or about seven benchmarks every week.

Thus, a school or district will surely have to select from the standards and benchmarks presented in this report if it wishes to construct a system in which students are to be held accountable for each benchmark. A reasonable number of benchmarks seems to be about 600, distributed in roughly the following way:

Level I: K–2: 75

Level II: 3–5: 125

Level III: 6–8: 150

Level IV: 9–12: 250

Quite obviously, to implement this 600-benchmarks cap, schools and districts would have to exclude quite a few of the benchmarks identified in this report.

3. Will all selected benchmarks be considered necessary to demonstrate competence in a standard?

One possible way to alleviate the problem of too many benchmarks is to consider benchmarks as exemplars rather than as necessary components of a standard. Using this option, students would be held accountable for demonstrating a mastery of a sample of the benchmarks within a level for a given standard as opposed to all the benchmarks within a given level.

To illustrate, consider the benchmarks in figure 4.1 for the science standard "Understands energy types, sources, and conversions, and their relationship to heat and temperature." A school or district that takes the "exemplar" approach to benchmarks would require students to demonstrate competence in a selected number of benchmarks per level. For example, a school or district might require students to demonstrate competence in two out of the three benchmarks for Level I; three out of five for Level II; five out of seven for Level III; and six out of eight for Level IV. This approach would allow a school or district to meet a larger number of standards without exceeding the recommended limit of 600 benchmarks discussed in the preceding section. It would also allow for more flexibility within the classroom, in that individual teachers would have the option to use those benchmark components which they judged most applicable for their students. However, this approach also results in less continuity of coverage within a content domain since different teachers will no doubt select different benchmark exemplars to illustrate student competence within the levels for a given standard. It is also important to note that this approach may defeat the designed purposes of some well-articulated standards, such as those developed by Project 2061, where upper-level benchmarks are predicated under the assumption that students are familiar with a logically prior concept addressed at an earlier level. If teachers select without regard to articulation, some of the value of this approach may be lost.

Figure 4.1

Level I (Grades K–2)

Knows that the Sun applies heat and light to Earth

Knows that heat can be produced in many ways (e.g., burning, rubbing, mixing chemicals)

Knows that electricity in circuits can produce light, heat, sound and magnetic effects

Level II (Grades 3–5)

Knows that things that give off light often also give off heat

Knows that mechanical and electrical machines give off heat

Knows that heat can move from one object to another by conduction

Knows that some materials conduct heat better than others; materials that do not conduct heat well can reduce heat loss

Knows that electrical circuits require a complete loop through which the electrical current can pass

Level III (Grades 6–8)

Knows that energy comes in different forms, such as light, heat, chemical, nuclear, mechanical and electrical

Understands that energy cannot be created or destroyed, but only changed from one form to another

Knows that the Sun is a major source of energy for changes on the Earth's surface; the Sun's energy arrives as light with a range of wavelengths consisting mainly of visible light with significant amounts of infrared and ultraviolet radiation

Knows that heat energy moves in predictable ways, flowing from warmer objects to cooler ones until both objects are at the same temperature

Knows that heat can be transferred through materials by the collisions of atoms or across space by radiation; if the material is fluid, currents will be set up in it that aid the transfer of heat

Knows that electrical circuits provide a means of converting electrical energy into heat, light, sound, chemical or other forms of energy

Knows that in most chemical reactions, energy is released or added to the system in the form of heat, light, electrical or mechanical energy

Level IV (Grades 9–12)

Knows that although energy can be transferred by collisions or waves and converted from one form to another, it can never by created or destroyed, so the total energy of the universe is constant

Knows that all energy can be considered to be either kinetic energy (energy of motion), potential energy (depends on relative position), or energy contained by a field (electromagnetic waves)

Knows that heat energy consists of random motion and the vibrations of atoms, molecules, and ions; the higher the temperature, the greater the atomic or molecular motion

Knows that energy tends to move spontaneously from hotter to cooler objects by conduction, convection or radiation; similarly, any ordered state tends to spontaneously become less ordered over time

Knows that the energy of waves (electromagnetic and material) can be changed into other forms of energy (e.g., chemical and electrical), just as other forms of energy (chemical and nuclear) can be transformed into wave energy

Knows that some changes of atomic or molecular configuration require an input of energy, whereas others release energy

Knows that each kind of atom or molecule can gain or lose energy only in particular discrete amounts and thus can absorb and emit light only at wavelengths corresponding to these amounts; these wavelengths can be used to identify the substance

Knows that fission is the splitting of a large nucleus into smaller pieces, and fusion is the joining of two nuclei at extremely high temperature and pressure; nuclear reactions convert a fraction of the mass of interacting particles into energy

4. Will student performance be reported using course grade or standards?

Currently, most schools and districts report student progress using appropriate grades for broad academic areas organized within courses. However, current research and theory indicate that courses of the same title do not necessarily cover the same content (Yoon, Burstein & Gold, not dated). In other words, two courses of the same name do not necessarily cover the same declarative, procedural, and contextual knowledge. If a school or district wished to use traditional grades but implement a standards-oriented approach, it would ensure that the benchmarks that have been identified would be distributed systematically throughout the various courses within content areas, that is, specific benchmarks would be assigned to courses based upon the elements they cover. Any two courses with the same title would not only cover the same benchmarks but would place the same relative importance on the benchmarks they cover.

For example, assume that two courses of the same title were designed to cover the same seven benchmarks. The school or district could also determine which percentage of the grade each benchmark would command. In such a case, it might be determined that the first two benchmarks each accounted for 25% of the grade and the remaining five benchmarks each accounted for 10% of the grade. Clearly, this would provide more precision for course descriptions and show an equivalence between "identical" courses that is not often found today.

In summary, traditional grading practices and standards-based assessment are not incompatible. A school or district must simply distribute and weight the standards that have been identified across the various courses in a systematic, well-reasoned fashion.

The second reporting option a school or district might adopt is to report student progress by benchmarks. Rather than assign a single grade to a course, a teacher would report progress in some way for each benchmark covered in the course. In effect, for assessment purposes only, each benchmark component would be considered independent of the others covered within the course. When this approach is taken, schools and districts commonly employ rubrics as opposed to grades. A rubric is a description of the levels of understanding or skill for a given benchmark. For example, below is a rubric for the Level II mathematics benchmark "Understands the basic role of place value":

1. Demonstrates a thorough understanding of the role and function of place value and provides insights that are not obvious when using the concept of place value.
2. Demonstrates a complete and accurate understanding of the role and function of place value as it relates to estimating or calculating addition, subtraction, multiplication and division.
3. Displays an incomplete understanding of the role and function of place value as it relates to estimating or calculating addition, subtraction, multiplication or division.
4. Has severe misconceptions about the role and function of place value as evidenced by severe place value errors in addition, subtraction, multiplication or division.

Commonly, one of the described levels within a rubric is designated as the targeted level of skill or knowledge. For example, a score of 3 in the reporting rubric above might be selected as the target standard for the Level II mathematics benchmark "Understands the basic role of place value."

Reporting out by benchmarks would, of course, require a record-keeping system that is far different from that currently used in most schools and districts. Each student's score on individual benchmarks would be recorded. Assuming the use of a four-point rubric, individual students would receive a score of 1 through 4 on each benchmark assessed within each standard. These scores could then be averaged to obtain an overall standard score at a given benchmark level.

5. Will all students be required to meet all standards?

A major decision facing a school or district that wishes to emphasize content area standards is whether students will be required to meet a targeted level of knowledge and skills. This approach is reminiscent of the mastery learning approach of the 1970s and early 1980s (see Levine & Associates, 1985) and the more recent outcomes-based approach, or OBE approach (Spady, 1988). In the context of the reporting rubric described previously, a mastery or outcomes-based approach would mean that students would be required to receive a score of 3 on each benchmark. If a student did not meet the targeted level for a benchmark (i.e., did not obtain a score of 3 on the rubric), he or she would be provided with additional instructional opportunities until he or she could meet the required proficiency. Of course, such a system makes extreme demands on resources. In a traditional system, no extra resources need be used if a student does poorly in a course. In a mastery or OBE system, each student who does not meet a standard must be provided with whatever instructional and curriculum resources are necessary to ensure that the student meets the requirements. A variation in the theme of a comprehensive mastery or outcomes-based approach is to require that students meet the performance standards on **some**, but not all, benchmarks. Those benchmarks that are applied to all students would be considered a set of core requirements.

In summary, there are many important decisions a school or district must make regarding the implementation of a standards-oriented approach to schooling. In this section, we have discussed five of the decisions that deal with the nature and function of standards and benchmarks and the extent to which students will be held accountable for them.

The Process Used in This Report

Although some variations exist in the manner in which standards from different domains were addressed, a general process was followed to identify the standards in this report.

Identify National Reports

In February of 1990, President Bush and state governors established a set of national educational goals. One of those was that by the year 2000, American students would demonstrate mastery over challenging subject matter in core subject areas. Congress has since defined the goal areas to include the domains of English, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography. In addition, the set of goals states that all students should have access to physical education and health education to ensure they are healthy and fit. Given this national mandate for improved student performance in these areas, the most significant documents in the fields were identified; standards are being identified in each of them and are provided in this report.

In addition to these areas, documents were also reviewed for the domain of the workplace. Workplace standards, as made clear from recent Skills Standards efforts funded by the Departments of Education and Labor, were developed to meet the growing demand for a smoother transition from school to the workplace.

It is important to note that a number of documents used were in draft form. All relevant documents are discussed in the appropriate subject sections.

Select Reference Documents

Since there was more than one document within many of the domains considered, a reference report was selected for each domain. Reference documents were selected based on their completeness, perceived acceptance by the subject discipline community, and compatibility with the perspective of standards and benchmarks taken in this report.

Identify Standards and Benchmarks

Once a reference document was selected, standards and their benchmarks were identified. This was done from both "top-down" and "bottom-up" perspectives. A top-down perspective was taken when a reference document contained explicit standards that were at a level of generality consistent with the position on standards taken in this study. In such cases, the standard found in the reference document was accepted with minor modifications, or if rewritten, kept close to the original meaning. Benchmarks were then identified for each standard. Depending upon the character of the document, this process could entail the straightforward identification of explicitly stated benchmarks or an analysis of the material to find information about knowledge and skills that was implicit. This would be the case, for example, if essential knowledge and skills were presented in the form of an instructional activity rather than as a description of the important knowledge and skills. In some cases, however, a reference document articulated standards at a different level of generality (too general or too specific) or in a different format (performance or curriculum standards as opposed to content standards). In such situations, implicit and explicit benchmark components (declarative, procedural, and contextual elements) were identified first. These were then organized into standards. In effect, such standards were designed from the bottom up.

Integrate Information from the Other Documents

When the analysis of the reference document was complete, information from the other documents was then integrated into the standards and benchmarks identified from the reference document. On some occasions, the analysis of secondary documents within a domain illustrated a need to create new standards that were not explicit or implicit in the reference document.

Organize Standards into Categories

In all, this report describes 252 standards and their related benchmarks. These standards have been organized into 13 major categories. In a number of cases, the organization was straightforward; for example, standards generated from and referenced to science documents were placed under the category of science. Such an approach was followed for the areas of mathematics, geography, and history. For other categories, the bottom-up approach, which characterized the formation of standards from benchmarks, also was used to organize similar standards into larger areas. The standards and benchmarks developed into 13 categories can be found in Figure 5.1.

Figure 5.1 The standards and benchmarks identified in this document

	Standards	Benchmarks
Mathematics	9	349
Science	18	324
History		
Historical Understanding	2	42
K–4 History	8	109
As Implemented 1	4	55
U.S. History	31	423
As Implemented 1	10	141
World History		
Core Material 2	39	471
As Implemented 1	13	157
Related Material 2	218	
As Implemented 1	13	72
Language Arts	13	372
Geography	18	238
Connections	1	13
Dance	6	62
Music	7	80
Theatre	6	72
Visual Arts	5	42
Arts (total)	25	269
Civics	29	427
Economics	10	173
Foreign Language	5	86
Health	10	136
Physical Education	5	105
Behavioral Studies	4	100
Thinking and Reasoning	6	117
Working with Others	5	51
Self-Regulation	6	59
Life Work	9	90
Life Skills (total)	26	317

[1] The total number shown for the history standards is not equivalent to numbers in other subject areas, inasmuch as a history standard can be completely addressed by meeting the benchmarks at any one level. Thus, the number of stan-

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dards in place at any one time is considerably less than the total. For a discussion, see History, Section 9.

2 The national standards project for world history has identified those standards that are essential (core) as well as supplementary standards that may be used at discretion (related).

How the Subject-Area Sections are Structured

As described previously, standards may be procedural or declarative statements or may be statements that describe broader categories; they may be taken directly from draft documents or may have been constructed inductively or extrapolated from an analysis of the documents in the subject area. The benchmarks in this document, however, are all statements of declarative, procedural, and contextual knowledge taken from a wide range of national reports. In most cases, these benchmarks are organized under the standards at four levels:

Level I = K–2, or primary

Level II = 3–5, or upper elementary

Level III = 6–8, or middle school

Level IV = 9–12, or high school

However, in some areas, either because of the nature of the content or source materials, the levels are identified somewhat differently. Because of this, the level identifications are best understood as indicators of relative difficulty, rather than strictly equivalent to a range of grades. Attention should be paid to the parentheses following the levels to identify the grade range. For example, in the case of U.S. History, there are three levels identified:

Level II (Grades 5–6)

Level III (Grades 7–8)

Level IV (Grades 9–12)

Whereas in the standards for history at K–4, there are two levels:

Level I (Grades K–2)

Level II (Grades 3–4)

In this example it should be clear that Level II is a relative description, defining grades 3–4 for history in the early grades and grades 5–6 in the U.S. history standards.

The standards are organized and reported in the 13 categories described in the previous section. Each standard within a category is numbered consecutively (the numbering sequence has no significance and was done for ease of reference). The benchmarks are listed immediately under each standard and presented by level (I–IV). A set of codes, called a citation log, appears flush right and just above each benchmark and standard. A key for the log appears at the bottom of each page, so that readers are provided with the following information: the cognitive character of the benchmark (whether it describes declarative, procedural, or contextual knowledge); a page number citation for each instance in which the information was found in reference and supporting documents; the nature of that citation (whether the information was found explicitly stated or could be implied from other statements); and finally, in the case of duplicates, where very similar benchmarks can be found within the same subject area.

To illustrate:

(GE,115)

5. Understands the concept of regions

Level I (Grades K–2)

BD (GE,115;EI,13;NI,35;TI,10;DI,4.1.2)

Know areas that can be classified as regions according to physical criteria (e.g., landform regions, soil regions, vegetation regions, climate regions, water basins) and human criteria (e.g., political regions, population regions, economic regions, language regions)

"Understands the concept of regions" appears as the fifth standard in the geography section, and the benchmark shown is from Level I. Just above the benchmark, and flush right, is the abbreviation "BD," followed by the "citation log": (GE, 115; EI, 13; NI, 35; TI, 10; DI, 4.1.2). A key like the following is provided for each subject area:

Codes (right side of page): BD= Benchmark, Declarative; BP = Benchmark, Procedural; BC = Benchmark, Contextual

1st letter of each code in parentheses	2nd letter of code	Number
G =National Geography Standards	E = Explicitly stated in document	Page number of cited document
E = Guidelines for Geographic Education	I = Implied in document	or for duplicates,
N = NAEP: Item Specifications in Geography		Standard number & level of duplicate
T = K–6 Geography: Themes, Key Ideas		
D = Duplicated in another standard		

The key identifies "BD" as a benchmark that describes declarative knowledge. Within the parentheses that follow "BD," there a number of documents cited, separated by semicolons. The first code, GE,115, indicates that the information described in the benchmark can be found explicitly stated (E) in the National Geography Standards (G) on page 115; the second citation, EI,13, indicates that the same information, although not explicitly stated, is implied in (or, can be inferred from) material on page 13 of the Guidelines for Geographic Education. Similarly, the same information can be inferred from two additional documents, the NAEP item specifications and *K–6 Geography* (full citations for all reports are found in the bibliography). The last piece of information "DI,4.1.2" indicates that another benchmark contains very closely related information. In this case, that particular benchmark is under the standard number 4, at level 1, and is the second bulleted item.

Additionally, when the idea expressed at the standard level has been identified in supporting documents, that information is provided in parentheses, flush right, just above the standard statement. In the example above, the idea that students should have a general understanding of the concept of regions is found (GE,115) in the Geography Standards document on page 115.

Mathematics
(http://www.mcrel.org/standards-benchmarks/standardslib/math.html)

The following process was used to identify standards and benchmarks in the field of mathematics:

Identification of National Reports

Two basic reports were identified as the primary documents representing the current thinking on standards in mathematics: *Curriculum and Evaluation Standards for School Mathematics* (NCTM, 1989) and the *Mathematics Assessment Framework* (NAEP, 1992). As mentioned in Section 2 of this report, the NCTM document was a major contributor to the national awareness of the benefits of identifying standards in content domains. To prepare for the 1994 NAEP mathematics assessment, the National Assessment Governing Board awarded a contract in the fall of 1991 to the College Board to develop item specifications for the 1994 assessments.

Explicit in this project was an alignment with the NCTM standards, inasmuch as they were believed to reflect the most current thinking on what students should know and be able to do in mathematics. The resulting report, entitled *Mathematics Assessment Framework*, provided specific recommendations regarding the content that should be included in the 1994 NAEP assessment, the levels at which students should be assessed regarding specific content, and the proportion of items that should be devoted to specific content at specific levels. A supplemental document was also produced by NAEP entitled *1994 National Assessment of Educational Progress: Mathematics Assessment: Content Specifications* (NAEP, March 26, 1992). This provided additional detail to the *Mathematics Assessment Framework*.

In addition to these three documents which focus solely on mathematics, *Benchmarks for Science Literacy* (Project 2061, 1993 and 1993 draft) contains a section entitled *The Mathematical World*. This section parallels and details many of the standards found in *Curriculum and Evaluation Standards* (NCTM, 1989). At a much more general level, two documents from the "world of work" contain explicit statements regarding what students should know and be able to do in mathematics: *What Work Requires of Schools: A SCANS Report for America 2000* (The Secretary's Commission on Achieving Necessary Skills, 1991) and *Workplace Basics: The Essential Skills Employers Want* (Carnevale, Gainer & Meltzer, 1990). Finally, the document detailing the national standards in geography, *Geography for Life: National Geography Standards* (Geography Education Standards Project, 1994), contains a number of implicit statements pertinent to mathematics standards.

Selection of the Reference Document

Because of its wide recognition, the NCTM document was selected as the reference report. Additionally, the report had characteristics amenable to the standards/benchmarks model used in this study. Specifically, the report explicitly identifies standards at three developmental levels grades K–4, 5–8, and 9–12. The latter two levels corresponded well with levels 3 and 4 used in this study. However, the elements identified in the K–4 level of the NCTM document were necessarily reclassified into Level 1 (primary) or Level 2 (upper elementary) for the purposes of this study.

Identification of Standards and Benchmarks and Integration of Information from Other Documents

Close examination of the NCTM levels indicated that in some cases there appeared to be little designed relationship between the content in one developmental level and that in the next. Not infrequently, new types of knowledge and skill were introduced at a superordinate level that seemed to have no developmental relationship to the knowledge and skill identified in the subordinate level. Consequently, many elements within the various NCTM standards and levels were reclassified as more appropriately fitting within another standard. This reclassification process was highly influenced by the NAEP documents. Where the NCTM document identifies 13 standards at Levels 1 and 2 and 14 standards at Level 3, the NAEP document identifies five general categories articulated at three levels roughly equivalent to the three NCTM levels. Our reclassification tended to collapse some of the NCTM standards such that the final set of nine standards (see below) resembled the NAEP classification as much as it did the NCTM classification. In effect, our reclassification tended to erode the original structure of the NCTM document. Another factor contributing to the erosion of the structure of the NCTM organizational structure was its inclusion of explicit standards regarding mathematics as reasoning and mathematics as communication. For reasons discussed in Section 3 of this report, many of the elements identified within the NCTM standard on mathematics as reasoning were judged to be more appropriately classified under one of the standards within our thinking and reasoning category, and some of the elements within the NCTM standard on mathematics as communication were judged to be more appropriately classified under one of the standards within our language arts category.

Finally, a number of the elements in the NCTM document were identified either as "expert" in nature or curriculum standards, as opposed to content standards, and were not included in the analysis.

For the most part, the information in the documents from the world of work, science and geography was integrated into the standards generated from the NCTM and NAEP reports. The one exception to this general rule was standard 9, Understands the General Nature and Uses of Mathematics. As the title indicates, this standard deals with general awarenesses about mathematics and its relationship to other disciplines, particularly science. This standard was generated solely from the document *Benchmarks for Science Literacy*.

Science

Browse the Science Standards (http://www.mcrel.org/standards-benchmarks/docs/chapter8.html)

The following process was used to identify standards and benchmarks in the field of science:

Identification of National Reports

Three reports were identified as significant for representing current thinking on content standards in science: a draft document available from the National Committee on Science Education Standards and Assessment (NCSESA), *National Science Education Standards* (November, 1994); *Project 2061's Benchmarks for Science Literacy* (1993); and the National Science Teachers Association's (NSTA) *Scope, Sequence, and Coordination of Secondary School Science: The Content Core* (Pearsall, 1993). Additionally, supporting citations were available from the California Department of Education's *Science Framework for California Public Schools* (1991), and from two reports from the National Assessment of Educational Progress, *Science Objectives for 1990* and *Exercise Specifications for 1994 NAEP.*

Selection of the Reference Document

The draft of NCSESA's *National Science Education Standards* was selected as the reference document. This choice required some modification of the standards that were published in our January 1994 update, which had used Project 2061's *Benchmarks for Science Literacy* as the reference. As noted at that time, available drafts from the standard-setting group were not then at a stage of completion that could provide sufficient detail for our purposes.

Identification of Standards and Benchmarks

The content standards from NCSESA, which "outline what students should know, understand, and be able to do in natural science" (p. V–1), are grouped into categories at three grade levels (K–4, 5–8, and 9–12). The number of standards varies by grade level within each of seven categories:

1. Science as inquiry
2. Physical science
3. Life science
4. Earth and space science
5. Science and technology
6. Science in personal and social perspectives
7. History and nature of science

A final area, "unifying concepts and processes," is not articulated for grade levels, but is intended for development across K–12 science education.

Science information in NCSESA's document is articulated for K–12 at the category level, but not at the standard level. That is, each standard and its associated content appears only once, and at one level (K–4, 5–8, or 9–12). For example, in the physical sciences under the heading "Earth and space science," a standard with the topic "Objects in the sky" appears with two related standards at grades K–4 only; at grades 5–8, three standards are under that category, and a closely related topic is "Earth in the solar system." At grades 9–12, four standards cover the area, and the one nearest in content to "Earth in the solar system" or "Objects in the sky" is the "Origin and evolution of the universe." Thus, the 86 standards are closely related within categories, but are not articulated across the grade ranges by standard. Since our model calls for the articulation of standards across grade levels wherever possible, some reorganization of content was necessary. Although in part the benchmarks were constructed into standards from "the ground up," there was strong guidance provided by the structure of standards available from Project 2061's *Benchmarks for Science Literacy.*

One significant change results from our selection of the NCSESA draft as the new reference document for the identification of standards in science. The reader will find increased emphasis on the nature of scientific knowledge, scientific inquiry, and the design process. In addition, sufficient material and direction from the NCSESA standards document were found to warrant a standard on the relationships of science, technology, and society. At the benchmark level, Project 2061's Benchmarks proved very useful for distinguishing content at the grade ranges selected for this study: K–2, 3–5, 6–8, and 9–12. Material from the reference document, NCSESA's November draft, was added to or revised in four cases: 1) when minor modification of a benchmark statement allowed for additional citation support, 2) when the original statement carried more than one basic idea and was divided into components, 3) when stylistic changes helped the sense of the statement, and 4) when benchmark statements not in the science standards draft were added because the information was found to appear consistently in the other major documents identified for science. Additionally, there were very few instances of content duplication across standards. In each case that the subject material appeared to be redundant across standards, it was also clear that the same benchmarks within a standard served the purpose of preparing students for more complex, related ideas at later benchmark levels. For this reason, the duplicates were not deleted as would otherwise be done, but cross-referenced in the citation log. (For more detail, see Section 6, How the Subject-Area Sections are Structured.)

Integration of Information from Other Documents

The documents used to integrate information were NSTA's *Content Core* and the *California Science Framework*. Each was referenced to provide science teachers with ready access to sources via page number citations keyed to the benchmarks. In addition, *Content Core* and Project 2061's *Benchmarks* provided a means for evaluating whether additional benchmarks should be added to the reference document. If information found at the appropriate level in either document could not be found in the reference document (NCSESA's draft standards), then it was identified for possible inclusion as an additional benchmark. A compiled list of this information was then compared against information in the *California Science Framework* and the two documents from NAEP. If the information was found to be present in at least two documents *(Content Core* and/or *Benchmarks*, and one of the three supporting documents), it was integrated with the information from the reference document into a benchmark. Evidence for this process can be found by an examination of the "citation log" associated with each benchmark: if the benchmark does not show a reference to NCSESA's draft document, then it was added to the information from the reference document using the process just described.

History

(http://www.mcrel.org/standartds-benchmarks/toc/docs/chapter9.html)

The following process was used to identify standards in the field of history:

Identification of National Reports

Six reports were identified as important documents representing current thinking on history in the schools. Three reports originate from the National Center for History in the Schools (NCHS) *History Standards Project: National Standards for World History, National Standards for U.S. History and National Standards for History for Grades K–4* (1994). In addition, NCHS published *Lessons From History: Essential Understandings and Historical Perspectives Students Should Acquire* (1992). Two other significant documents are the *Provisional Item Specifications for the 1994 NAEP in U.S. History* (NAEP, undated) and *Building a History Curriculum: Guidelines for Teaching History in the Schools* (Bradley Commission on History in the Schools, 1988).

Selection of the Reference Document

The NCHS national standards documents were selected as reference documents for World, United States, and K–4 history. The national standards documents were selected because they represent the efforts of a broad group of historians from schools and universities. In addition, they are the only documents available that provide a consistent level of detailed information for both world and U.S. history. The history standards documents also give direction for writing benchmarks at grade level (K–4 history provided information for grades K–2 and K–4; United States and world history covered grades 5–6, 7–8, and 9–12). Such leveling is not within the scope of a work like *Lessons from History,* which deals primarily with what students should know by the end of their schooling.

The standards documents were also used as the reference for standards in Historical Understanding, discussed below. These documents, in turn, show indebtedness to Bradley's *Building a History Curriculum,* which provides supporting material for the "Historical Perspective" standard in this work.

Identification of Standards and Benchmarks

In addition to the content material in history, the national standards documents include standards in Historical Thinking that cover five areas: (1) chronological thinking, (2) historical comprehension, (3) historical analysis and interpretation, (4) historical research capabilities and (5) historical issues-analyses and decision-making. These standards consist of from 4 to 10 statements each. Our analysis showed us that much of this material described general thinking and reasoning abilities or information processing abilities that could be applied to a variety of subject matter, and were not exclusive to history. In accord with our model, then, this material was integrated into the appropriate standards on thinking and reasoning (see Section 17. Life Skills) or the language arts. Two areas, however, appeared to be uniquely related to the study of history, and appear as standards under the category of Historical Understanding: the first treats chronological relationships and patterns, and the second addresses the historical perspective, as outlined first in the Bradley report.

The World and U.S. History standards and benchmarks in this book represent a revision and abridgement of the material that appeared in the last edition (Kendall & Marzano, March 1995). This revision builds on the previous edition, however, in that it begins from the analysis and synthesis done at that time of the multiple levels and types of information found in the *National Standards* documents.

In order to understand the method used to render material from the source documents it is useful to provide a description of them. There are five levels of organization in the U.S. and world history documents from NCHS. The outermost level is a grouping by historical era. Each era is comprised of two to four statements, which are called standards, and comprise the next, or second level. Each standard is further divided into subheadings, the third level of organization. These subheadings are divided into components designed to help students "demonstrate the integration of historical understanding and thinking." These components, the fourth level, are labeled with grade ranges (5–12, 7–12 and 9–12). Finally, the fifth level is comprised of "examples of student achievement" at grades 5–6, 7–8 and 9–12. It should be noted that in this design it is only at the fifth level, three levels below the standard, that information is found that provides grade appropriate material. For this reason we determined that all levels had to be analyzed to identify grade level benchmarks, in other words, that we otherwise would not have the means for distinguishing benchmark material at 5–6, for example, from information that was more appropriate for grades 7–8, or 9–12.

Thus, in order to compose benchmarks, we analyzed the material in the lowest three organizational levels. These levels were then combined in such a way that the topics found at the lowest levels were kept as a part of the benchmark, but the most detailed level of information was deleted, that is, the information that served to elaborate and extend on the example of student achievement. To take an example almost at random, the following are tasks, or "examples of student achievement," at grades 9–12 of the National Standards for World History:

- Read selections from the philosopher Zhu Xi's conversations with his followers and from the *Schedule for Learning,* and discuss the basic ideas of Neo-Confucianism. Analyze how these ideas affected Chinese society, government, and education
- Read the instructions Zhu Xi gave on rites for honoring ancestors in his Family Rituals, and discuss the relationship between popular rites and Zhu Xi's Neo-Confucian philosophy
- Research how economic changes in China affected society. How mobile was the gentry class? (p. 133)

These activities appear related to the 4th level headings " . . . major dynastic transition China experienced and the changes in Confucianism in the 10th and 13th centuries" and " . . . the growth of an economically powerful merchant class in China." The third level heading, that is, the one just beneath the standard level, states that students should be able to: "Demonstrate understanding of China's extensive urbanization and commercial expansion between the 10th and 13th century." Taking this information into account, the following single benchmark was developed to cover the activities cited above at grades 9–12:

- Understands significant religious and economic aspects of Chinese society between the 10th and 13th centuries (e.g., the impact of economic growth on Chinese society and how it affected the gentry class; how Zhu Xi's basic ideas of Neo-Confucianism affected Chinese society, government, and education)

In one sense, the "stuff" of history the defining facts, events, and episodes is not amenable to such presentation by developmental levels; and aside from the advantages of introducing information in a chronological sequence, we have not discovered other arguments or research on how this kind of material might be benchmarked. As noted in *Lessons From History,* however, "Historical knowledge must go beyond the factual knowledge implicit in these lists—**important though that knowledge is**—to the explanations of the causes and consequences of these events and the interpretations which can be drawn concerning their enduring significance" (p. 48). What varies from grade level to grade level in the standards documents from NCHS is the sophistication of the "examples of student achievement." These activities are somewhat problematic, in that they mix curriculum and performance with content standards. Additionally, these activities have been recently criticized by a panel convened by the Council for Basic Education (see Section 2, "History") "for undermining principles of scholarship by asking leading questions or by inviting students to make easy moral judgments about historical questions that continue to be debated by scholars" ("Review panels," CBE, October 1995). An analysis of these activities solely for content, however, does indicate some level of distinction between grades, for generally speaking it is often possible to discern between grade levels a difference in the level of detail and depth of understanding demanded from students. Thus, when these activities were examined for their content, and the specific task requirements were removed, they provided useful information for the composition of benchmarks. A similar, though somewhat simpler, structure is found in the *National History Standards for K–4,* as was found in the U.S. and world history documents, and the kind of analysis described above was applied to that document to generate the standards and benchmarks at the levels K–2 and 3–4.

Integration of Information from Other Documents

Outside of the technical demands of the model employed for the identification and synthesis of content standards and benchmarks, this study applies no other criteria related to the academic content or appropriateness of any standard or benchmark. That is, every effort has been made to provide consistent distinctions between levels and types of content description, but no criteria is applied to determine the value of that content. It is clear, however, that NCHS standards have generated some public discussion on content and, in fact, appear likely to undergo some revision in the near future. In light of this, readers who would like to consult this work in order to inform their own development of history standards might want to acquaint themselves with the citation process used in our model (see section 6. How Subject-area Sections are Structured). To reiterate briefly, every benchmark developed from the standards document is reviewed against the available source documents: in this case, *Lessons from History,* and NAEP's *Provisional Item Specifications.* If the benchmark content is found to be expressed or implied in those documents, the "citation log," located flush right and just above the benchmark, will indicate this as well as whether the information was explicitly stated or implied, and the page number on which it was found. Thus, any benchmark can be examined to determine whether it appeared in a source in addition to the National Standards documents. It should be noted, however, that the NAEP's *Specifications* cover only U.S. history, not world history. Additionally, the *Lessons from History* document is written at a more general level of detail than is found at the benchmark level for this document and consequently is not frequently cited.

A Note on the Number of History Standards

The number of standards identified for history in this document might at first appear formidable (see figure 5.1 in section 5. The Process Used in this Report). However, when considered in terms of how these standards are designed for use, the number of standards in U.S. or world history is more nearly comparable to the number of standards found in other subject areas. In history, unlike other areas, each set of benchmarks (at grades 5–6, 7–8, and 9–12) is designed to provide a full description of that standard; in other words, as is the case in most schooling now, material for one historical era is unlikely to be repeated at a different level of schooling. Once a standard is met at particular grade level, the student is no longer required to meet it.

As an example, if a school or district should decide to teach the era on "Civil War and Reconstruction" at the 7–8 grade levels, the standards and benchmarks under that era would not be addressed again at 9–12. For other subject-area standards in this report, by contrast, if a standard has benchmarks listed at more than one grade level, it indicates that the student is expected to meet benchmarks in the other grade levels listed.

Thus, as a hypothetical example, if the standards were implemented fairly evenly across grade levels, each student studying U.S. history would not be responsible for more than 31 standards (91 standards by the 3 years of study recommended by NCHS) at any one time. In world history, the design is only a little more complicated and results in greater flexibility. In addition to the design for implementation found in U.S. History, the authors of the world history have identified material as "core" or "related." Core material is deemed essential for a grounding in world history; "related" material is important, but not critical, and can be omitted if necessary. In this report, each benchmark is designated as either "core" (C) or "related" (R).

Language Arts

(http://www.mcrel.org/standards-benchmarks/docs/chapter10.html)

The following process was used to identify standards and benchmarks for the language arts:

Identification of National Reports

This category deals with basic knowledge and skill in reading, writing, and language. Unfortunately, as described in Chapter 2, the federally funded efforts to develop language arts standards have come to a stop. Specifically, federal funding halted for the Standards Projects for the English Language Arts (SPELA) as of March 1994. One complete draft document has survived from that effort, the *Incomplete Work of the Task Forces of the Standards Project for English Language Arts* (1994). It identifies standards in five broad areas referred to as strands. The five strands are (1) Reading/Literature, (2) Writing, (3) Language, (4) Real World Literacy, and (5) Interconnections. The document was the product of a joint effort of the Center for the Study of Reading (CSR) at the University of Illinois, the International Reading Association (IRA), and the National Council of Teachers of English (NCTE). When funding for SPELA was halted in 1994, NCTE and IRA continued their joint effort to produce language arts standards. In October 1995 a draft document entitled *Standards for the English Language Arts* (NCTE, IRA, 1995) was distributed for review. It articulated eleven standards primarily dealing with reading and writing. However, it has been criticized for its lack of specificity as was the SPELA document.

Fortunately, a number of other documents contain explicit and implicit descriptions of language arts standards; they provided a rather comprehensive source of information for identifying standards in the English language arts. The most explicit of these are documents produced by the National Assessment of Educational Progress (NAEP) as a part of its 1992 assessment efforts. In the area of writing, NAEP has produced the *Description of Writing Achievement Levels Setting Process and Proposed Achievement Level Definitions* (1992). This document provides descriptions of basic, proficient, and advanced levels of performance at three levels: grade 4, grade 8, and grade 12. The performance levels represent fairly straightforward descriptions of what students should know and be able to do in writing. In reading, NAEP has produced the *Assessment and Exercise Specifications: NAEP Reading Consensus Project: 1992 NAEP Reading Assessment* (1990). This document provides explicit statements of what students should know and be able to do relative to the process of reading and identifies the types of materials students should be able to read at various levels. Other sources of explicit descriptions of knowledge and skills students should acquire within the language arts include documents from the Edison Project (1994a, 1994b, 1994c), selected language arts frameworks from the state of California (California State Department of Education, 1993, 1994b, 1994c), the language arts framework from New York State (New York State Education Department, 1994), the language arts standards framework from Australia (Australian Education Council, 1994), and the draft document from the New Standards Project (New Standards, June 1995). At a more implicit level, *The English Coalition Conference: Democracy through Language* (NCTE, 1989) provides very general descriptions of the knowledge and skills important to the language arts at the elementary and secondary levels.

One area of interest to the language arts not addressed in previous versions of this project is literature. To obtain a comprehensive view of the various perspectives regarding the literature with which students should be familiar, a number of sources were consulted. These included: selected lists of recommended readings from the National Council of Teacher of English (Committee on the Junior High and Middle School Booklist of the National Council of Teachers of English and Nilsen, 1991; Committee on the Senior High School Booklist of the National Council of Teachers of English and Wurth, 1992); a list of recommended readings from the New England Association of Teachers of English (Stotsky, Anderson, and Beierl, 1989); recommended readings from the California State Department of Education (California State Department of Education, 1989); lists of "best books" by Gillespie (1991a, 1991b); and recommended literature by Ravitch and Finn (1987), E.D. Hirsch (Hirsch, 1987, 1993a, 1993b, 1993c, 1993d, 1993e, 1993f), and the Edison Project (1994a, 1994b, 1994c).

In addition to documents that have a specific focus on the language arts, there are a number of reports from other content areas that have explicit and implicit standards that deal with reading and writing. Among these are *Expectations of Excellence: Curriculum Standards for Social Studies* (NCSS, 1994); *National Standards for World History, National Standards for U.S. History and National Standards for History for Grades K–4* (NCHS, 1994); *Geography for Life: National Geography Standards* (Geography Education Standards Project, 1994); and *Curriculum and Evaluation Standards for School Mathematics* (National Council of Teachers of Mathematics, 1989).

Finally, what might be termed "the world of work" has produced documents that contain both implicit and explicit statements of what students should know and be able to do in reading and writing. These include *What Work Requires of Schools: A SCANS Report for America 2000* (The Secretary's Commission on Achieving Necessary Skills, 1991) and *Workplace Basics: The Essential Skills Employers Want* (Carnevale, Gainer & Meltzer, 1990).

Selection of Reference Documents and Identification of Standards

If the federally funded effort to identify English language arts standards had not ceased, the latest draft document of the SPELA effort would have been the most logical choice as the reference report. Additionally, the "unfunded" effort by NCTE and IRA has produced a document that is far too general to satisfy the level of detail necessary for this project. Given the absence of a single official "source" of standards, different reference documents were identified for different aspects of the English language arts. Two NAEP documents were identified as reference documents for reading and writing since they contained the most explicit statements of standards. Specifically, the reference document selected for the general area of writing was the *Description of Writing Achievement Levels Setting Process and Proposed Achievement Level Definitions.* The reference document selected for the general area of reading was *Assessment and Exercise Specifications: NAEP Reading Consensus Project: 1992 NAEP Reading Assessment.* Both of these documents contain a level of detail sufficient to provide a strong basis for identifying standards in the areas of writing and reading. The reference document identified for the area of listening and speaking was the standards framework developed by the Australian Education Council, *English: A Curriculum Profile for Australian Schools* (Australian Education Council, 1994). Although listening and speaking were addressed to some extent within other sources (e.g., the New Standards Project), the Australian Framework was deemed the most comprehensive treatment of this area.

No single source was used as the reference document for the area of literature. Rather, the literature cited in the various sources mentioned previously was organized into fairly traditional categories (e.g., nursery rhymes, fairy tales, folk tales, fiction, Greek and Roman mythology).

The final area addressed in the language arts standards is language. This area has traditionally been considered important to English language arts teachers as evidenced by its inclusion in the five strands identified in the SPELA effort. Consequently, the *Incomplete Work of the Task Forces of the Standards Project for English Language Arts* was considered the reference document for this area.

Analysis of the SPELA document, however, proved problematic because of its format. Rather than identify what students should know and be able to do within each strand, the document authors chose to provide vignettes at one or more of three levels: early school, middle school, and high school. In simple terms, a vignette is a description of what might occur in a classroom that exemplifies a specific standard. At the end of each vignette is a list of student "accomplishments" exemplified in the vignette. Some of the accomplishments listed after vignettes approached explicit statements of knowledge and skill. For example, the following are the accomplishments listed for the early-school vignette for the Reading/Literature Standard "Students will read, discuss and write about literature so that they can learn about themselves and their values, assumptions and beliefs":

- see their lives reflected in literature
- clarify assumptions about others as they read
- respect the uniqueness and diversity of individuals
- relate literature to their own lives

Given the very specific nature of standards and their related benchmarks as defined in this study, we analyzed the vignettes and the list of accomplishments following each vignette for implied and (occasionally) explicit statements of declarative, procedural, and contextual knowledge. In effect, we were obliged to extract implied statements of declarative, procedural and contextual knowledge based on a close reading of the activities and dialogues described in the vignettes.

In keeping with the fact that multiple reference documents were identified for the English language arts, the standards in this section are organized into five categories: writing, reading, speaking and listening, literature, and language. Four standards are identified in writing, six standards are identified in reading, one standard is identified in speaking and listening, one in literature, and one in language.

Integration of Information from Other Documents

The implicit and explicit information found in the other documents identified as pertinent to this area were integrated into the standards extracted from the reference documents. For the three history documents *National Standards for History for Grades K–4, National Standards for U.S. History, and National Standards for World History* (NCHS, 1994) this information came from the sections of those documents entitled Standards in Historical Thinking. These sections deal with thinking about and communicating about history. In the social studies document, *Expectations of Excellence: Curriculum Standards for Social*

Studies (NCSS, 1994), the information used to supplement the language arts standards was taken from the sections entitled Reading and Reference and Information-Search Skills. In the geography document, *Geography for Life: National Geography Standards* (GESP, 1994), the information was taken from the chapter entitled Geographic Skills and Perspectives, which deals with analyzing geographic issues and communicating about those issues. In the mathematics document, *Curriculum and Evaluation Standards for School Mathematics* (NCTM, 1989), the information was taken primarily from the standard that deals with communicating mathematically.

Finally, within the *SCANS Report and Workplace Basics*, reading and writing skills are addressed explicitly. This information was used to supplement the standards within those areas.

Geography
(http://www.mcrel.org/standards-benchmarks/docs/chapter15.html)

The following process was used to identify standards and benchmarks in the field of geography:

Identification of National Report

Four reports were identified as important documents representing current thinking on standards in geography: *National Geography Standards* (1994) from the Geography Education Standards Project; *Item Specifications: 1994 National Assessment of Educational Progress in Geography* (1992) from the NAEP Geography Consensus Project; *Guidelines for Geographic Education* (1984) from the Joint Committee on Geographic Education; and *K–6 Geography: Themes, Key Ideas, and Learning Opportunities* (1987) from the Geographic Education National Implementation Project.

Selection of the Reference Document

The Geography Education Standards Project's *National Geography Standards* (1994) was selected as the central document. The project has broad-based representation and was brought together for the express purpose of composing standards for geography. The project also makes use of the other important documents in the field (for further details, see the geography discussion under Section 2).

Identification of Standards and Benchmarks

The Standards work shares several aspects with our model for standards development. First, the standards statements in the document are expressed at a level of generality that fits our model for articulated standards. In addition, beneath each standard are provided descriptions of the knowledge and skills students should acquire in geography and in a range of closely related subjects.

There are a number of areas, however, in which the document is not directly compatible with our approach. For example, under each standard, student knowledge and skill are couched in terms of activities or tasks rather than in statements of declarative or procedural knowledge. For the most part it was possible, from a close analysis of the task, to discern what the authors considered to be the essential geographic knowledge or skill. Each activity, then, was studied to determine the knowledge or skill that might be presumed from a successful completion of the task. This analysis allowed us to generate benchmarks that describe declarative, procedural, and contextual content knowledge.

Another area of divergence between our model and the reference document concerns the range and number of benchmark levels. The standards document specifies three benchmark levels: K–4, 5–8, and 9–12. Our model recommends four, roughly corresponding to primary, upper elementary, middle, and high school. In this case, then, completion of our benchmark levels depended upon an analysis of supplementary materials that could provide us with further benchmark information, especially at the primary grades (discussed below).

Integration of Information from Other Documents

During the next stage of the process, the supplementary documents were reviewed, both to integrate information into the main document and to confirm our analysis of the reference document. That analysis, as described above, required us to deduce, from descriptions of tasks and activities, the knowledge and skills the authors believed the student should have. *Item Specifications: 1994 National Assessment of Educational Progress in Geography* provided us with an independent means to check the accuracy of our analysis. This document provides detailed descriptions as to the basic, proficient, and advanced levels of achievement in geography. For example, "Eighth grade basic" means that students should be able to, among other things, " . . . solve fundamental locational questions using latitude and longitude; interpret simple map scales; identify continents, oceans, and selected countries and cities . . . "(p. 54).

Another document used to support benchmark statements was *K 6 Geography: Themes, Key Ideas,and Learning Opportunities.* This guide for curriculum development also provided useful information for the elaboration of benchmarks at the primary level. This information was important because the reference document, as noted above, does not identify the knowledge and skills that might be especially suitable for the early (K 2) grades. Additionally, *Guidelines for Geographic Education,* which provides an instructional framework for teaching and learning geography by structuring content around five themes (Location, Place, Human-Environmental Interaction, Movement, and Regions), was analyzed and cited wherever appropriate at the benchmark level. Since page citations are provided for both these documents wherever appropriate, users are afforded easy reference to supporting material.

The Arts
(http://www.mcrel.org/standards-benchmarks/docs/chapter10.html)

The following process was used to identify standards and benchmarks for the arts:

Identification of National Reports

Four reports were identified as important for representing current thinking on knowledge and skills in the arts: *The National Standards for Arts Education* (1994) developed by the Consortium of National Arts Education Associations, the *NAEP Arts Education Assessment Framework* (NAEP, 1994), the *Visual and Performing Arts Framework for California Public Schools: K–12* (California Department of Education, 1989), and *The School Program: Description and Standards* (1986) from the Music Educators National Conference.

Selection of the Reference Document

The *National Standards for Arts Education* was selected as the reference document for constructing standards in the arts. The developers of the document represented a consortium of arts educators in music, theatre, the visual arts, and dance. The work provides content standards in each arts area, with "achievement standards" described for three levels: K–4, 5–8, and 9–12.

Identification of Standards and Benchmarks

At the standard level, most statements in the national document were retained with some revision to reflect the more content-oriented focus of this model. Additionally, one standard, Art Connections, was formed by combining very similar ideas from across the arts areas, namely, content that addressed the connections among various art forms and other disciplines.

At the benchmark level, there were some aspects in which the material for the arts standards was consistently revised and adapted to fit the model used in this study. This was the case when "achievement standards" in the national document were rewritten to describe specific knowledge and/or skill. For example, under the visual arts content standard "Using knowledge of structures and functions," one 8th-grade achievement standard is:

- [Students] generalize about the effects of visual structures and functions and reflect upon these effects in their own works (p. 50)

Because content standards are the focus of this study, material such as the example above was rewritten to describe the knowledge a student should have, rather than to describe an activity that might be used to demonstrate achievement of that knowledge. Additionally, detailed information was added to the benchmark when it was available; primary sources were the NAEP arts framework and a glossary provided in the *National Standards*. Thus, the benchmark was rewritten as: (AE,50;CI,95-96;NE,101)

- Knows the effects of various visual structures (e.g., design elements such as line, color, shape; principles such as repetition, rhythm, balance) and functions of art

For the example analyzed here, it should be noted that another standard in the visual arts, "Understands the characteristics and merits of one's own artwork and the artwork of others," separately addresses that aspect of the activity that concerns the students' review of their own works.

Integration of Information from Other Documents

As demonstrated above, supplementary documents were used to provide detail (which was the primary use of the NAEP framework) and to provide page references to a well-known curriculum framework, in this case, the California Visual and Performing Arts Framework. Additionally, material from *The School Program*, produced by the Music Educators National Conference, was used to provide benchmarks at K–2 in the section on music. In the other arts areas, no documents were found suitable to address this need; consequently, areas other than music are presented at levels found in the arts standards document: K–4, 5–8, and 9–12.

Civics

(http://www.mcrel.org/standards-benchmarks/docs/chapter12.html)

The following process was used to identify standards and benchmarks in civics:

Identification of National Reports

Two reports and a set of teacher's guides were selected for identifying standards in civics: *National Standards for Civics and Government* (1994) from the Center for Civic Education, *Civitas: A Framework for Civic Education* (Quigley & Bahmmeller, 1991), and a series of civics units authored and published by Law in a Free Society.

Selection of the Reference Document

The Center for Civic Education's *National Standards for Civics and Government* (1994) was selected as the reference report. The report was developed over two years, using a process that enlisted the participation of more than a thousand teachers and other educators as well as scholars, parents, educators, and representatives of public and private organizations.

Identification of Standards and Benchmarks

For the most part, the Standards document fits well with our model for the identification of standards. Essential ideas in civics are organized under some 70-plus content standards. Each content standard has associated with it a set of key concepts that students should know in order to meet the standard.

In three areas, however, the *Standards* document is not directly compatible with our approach. First, the content standards are often stated and elaborated upon through performance descriptions, that is, tasks that describe a specific demonstration of achievement. These tasks are prefaced with the statement, "To achieve this standard, students should be able to. . . . " What follows are activities that may require the student to identify, describe, or explain an idea, or to take, defend, or evaluate a particular position. The activities also provide important information about the content standard. Since our approach seeks to provide content knowledge that is either declarative, procedural, or contextual (see Section 3), we translated such tasks to benchmark statements of knowledge and skills specifically related to content in civics.

The second area in which the approach used in *National Standards for Civics and Government* differs from our model has to do with the articulation of standards across K–12. While standards appear at levels K–4, 6–8, and 9–12, and many similar ideas are organized beneath each level, there is no articulation across K–12 by standard level. While we believe content information from the reference document should be minimally revised in the process of identifying benchmarks, we consider the standards under which they are found to be more arbitrary in composition (see Section 3). Thus, in order to accomplish the articulation of standards across grade levels, we revised and combined a number of standards and reorganized the benchmarks beneath them.

Finally, our model and the reference document differ concerning the range and number of benchmark levels. The *Standards* document specifies three benchmark levels: K–4, 5–8, and 9–12. Our model recommends four, corresponding to primary, upper elementary, middle, and high school. In this case, then, completion of our benchmark levels depended upon an analysis of supplementary materials that could provide us with further benchmark information, especially at the primary grades (discussed below).

Integration of Information from Other Documents

The *Standards* document is unique in providing civics standards information from a national organization; in other words, supplementary documents were not available for the integration of other perspectives or for the verification of our content analysis. Supplementary material was instead used to provide the user with reference material keyed to the benchmark and to provide us a means for identifying knowledge and skills at the primary level. The Center for Civic Education's source book, *Civitas,* was cited at the benchmark level wherever possible. This was done to assist teachers and curriculum developers with a pointer to supporting material and information on a given topic. As noted above, the reference document does not isolate the knowledge and skills that might be especially suitable for the early (K–2) grades. In order to remedy this, we consulted a series of teacher guides available from Law and a Free Society. These books, which focus on the concepts of authority, privacy, justice, and responsibility, allowed us to distinguish information from the standards K–4 level that would be suitable for the primary grades.

Economics

(http://www.mcrel.org/standards-benchmarks/standardslib/econ.html)

The following process was used to identify standards and benchmarks in the field of economics:

Identification of National Reports

Four reports were selected to assist in the identification of standards and benchmarks in economics. Two of the reports consulted were published by the National Council on Economic Education (NCEE): Economics, *What and When: Scope and Sequence Guidelines, K–12* (Gilliard et al., 1989); and *A Framework for Teaching Basic Economic Concepts with Scope and Sequence Guidelines, K–12* (Saunders & Gilliard, 1995); one report was authored by the Colorado Council on Economic Education, *Conceptual Content Standards: Grades K–12* (1994); another by the National Council for the Social Studies' Expectations of Excellence: *Curriculum Standards for Social Studies* (1994).

Selection of the Reference Document

While there are economic standards in draft from the National Council on Economic Education (see Section 2), the material currently available does not present information organized by grade level. In addition, the content of the drafts appears to be very close, if not otherwise identical, to related curriculum material from the Council on Economic Education. For this reason, the document selected as the principle reference for the identification of standards was *A Framework for Teaching Basic Economic Concepts.* This recently published work is written "to enable students, by the time they graduate from high school, to understand enough economics to make reasoned judgements about both personal economic questions and broader questions of economic policy in a complex and changing world" (p. 3).

Identification of Standards and Benchmarks

We found the *Framework* useful for identifying benchmarks. Important concepts and generalizations in economics are organized by the grade levels at which they should be introduced and developed within the curriculum. The source material is written such that the smallest organizational unit, the content statement, is written at a level of generality that is equivalent to our benchmark. Thus, it was not difficult to determine what information should comprise a benchmark.

In some respects the reference document was not entirely compatible with our model for standards identification. First, the document includes challenging material designed for a capstone course in economics. Since our model calls for literacy rather than expertise in the subject areas, such standards material was not included in our analysis. Next, there were differences in organization. The reference document arranges content statements under 21 topic areas, which we found somewhat too narrow in scope to be useful as standards for organizing benchmark information articulated across grades K–12. Inasmuch as we consider the benchmark (as well as the grade sequence of benchmarks) to provide critical subject information, but view the organization of benchmarks into standards as arbitrary to some degree (see Section 3), we elected to consolidate some material under slightly larger ideas in order to provide a more even distribution of benchmarks across standards. This reorganization was done through consulting the supplementary documents (see below). Finally, there were differences between the reference document and our model in the grade ranges provided. The reference document provides content information at three levels of schooling, K–4, 5–8, and 9–12; we prefer four: primary, upper elementary, middle, and high school. We were able to provide benchmarks at all four levels through the use of the supplementary material discussed below.

Integration of Information from Other Documents

Material from NCEE, *Economics, What and When: Scope and Sequence Guidelines, K–2*, was useful for constructing benchmarks at the four levels our model adopts (primary, elementary, middle, and high school), since the document presents content material at two-grade increments from K–1 through grades 11–12. The document also was found useful for the examples it provided to help clarify content statements. Additionally, each statement of content in *Scope and Sequence* is accompanied by "student language" a version of the concept or generalization written in terms more accessible to students at the targeted grade levels. This language provided us with the means for composing benchmarks that were still accurate if somewhat less technical. Draft material from the Colorado Council for Economic Education (CCE) also provided guidance in writing benchmark statements. The CCE draft was found useful for the organization of benchmark statements into standards as well; some seven of our ten standards are closely modeled on that document. As is the case with all our supplementary documents, benchmarks include page number citations to the CCE document wherever similar content material has been identified.

In order to provide users of the National Council for the Social Studies' *Expectations of Excellence: Curriculum Standards for Social Studies* with a pointer to content information in economics, that document is cited at the benchmark level wherever appropriate. Additionally, these citations, along with those from the CCE draft might prove useful to those who desire some additional criteria for selecting a subset of benchmarks from the economics standards.

Foreign Language

(http://www.mcrel.org/standards-benchmarks/standardslib/forlang.html)

The following process was used to identify standards and benchmarks in foreign language:

Identification of National Reports

Two reports were selected for identifying standards in foreign language: a draft of *Standards for Foreign Language Learning: Preparing for the 21st Century* (April 1995) from the American Council on the Teaching of Foreign Languages (ACTFL) and a preliminary draft of *Foreign Language Standards* (1995) from the Colorado department of education.

Selection of the Reference Document

The April 1995 draft *Standards* document, the second thus far issued and the most recent available at the time of this publication, was selected as the reference report. The document represents the collaborative work-in-progress of the American Council on the Teaching of Foreign Languages, the American Association of Teachers of French, the American Association of Teachers of German, and the American Association of Teachers of Spanish and Portuguese.

Identification of Standards and Benchmarks

There are a number of similarities between the *Standards* draft and the model used to identify standards and benchmarks for this report. First, the draft's sample benchmarks, in a number of cases, provide descriptions of declarative, procedural or contextual knowledge, which accords with our requirements for a benchmark. Second, the standards statements are stated broadly enough to organize material across grades K–12.

In some ways, however, the *Standards* material differs from our approach. First, some of the draft benchmarks are broadly stated activities. For example, one benchmark states "students can work in groups to develop and propose solutions to problems that are of contemporary and historical interest in the target culture and in their own" (p. 19). From such descriptions as this it was not possible to extract specific knowledge and skills appropriate for a benchmark. In other cases, this tendency toward vagueness accompanies an emphasis on what we would describe as curriculum rather than content standards. For example, one standard, "Students reinforce and further their knowledge of other disciplines through the foreign language," contains benchmarks such as "students acquire information from authentic documents about a topic being studied in another class to integrate into activities in the foreign language classroom," and its correlate "students acquire information from authentic documents about a topic being studied in the foreign language classroom to integrate with other school subjects" (p. 32–33). As the rationale statement that accompanies the Standards material makes clear, this standard and its benchmarks are designed to foster the integration of foreign language into the broader curriculum. However worthwhile the goal, the effect of attempting such integration through content standards places new demands on students and teachers that might be unrealisitic. For example, it requires that students be responsible for seeing to it that the content in one class is successfully integrated with the content in another. Furthermore, such a standard places special demands on the design of school programs if teachers of a foreign language are to assess whether students have appropriately integrated material from another discipline, or if teachers in a non-foreign language class are to determine whether students have appropriately interpreted and applied material from a foreign language. Since the model we apply defines content standards and benchmarks as descriptions of the specific knowledge and skills students should acquire, such standards and benchmarks as the foregoing were not included in the analysis.

Finally, our model and the reference document differ concerning the range and number of benchmark levels. The standards document specifies three benchmark levels: K–4, 5–8 and 9–12. Our model recommends four, corresponding to primary, upper elementary, middle, and high school. Unfortunately, no supplementary material was available to remedy this problem. Consequently the material is presented at three levels, K–4, 5–8, and 9–12.

Integration of Information from Other Documents

While a number of states across the country are currently in the process of developing standards, none of the drafts so far produced was found to be especially useful for providing supplementary material by way of examples or elaboration of the material in the national standards document. However, in order to provide the user with a sense of the material in the *Standards* document that is frequently selected for use at the state level, we chose the Colorado draft document, which, albeit an early draft, represents this selection fairly well.

Health (http://www.mcrel.org/standards-benchmarks/standardslib/health.html)

The following describes the process used to identify standards for health:

Identification of National Reports

Six reports were identified as providing useful information on health education standards in the schools: *National Health Education Standards: Achieving Health Literacy* (1995) from the Joint Committee on National Health Education Standards; *Benchmarks for Science Literacy* (1993) from Project 2061, American Association for the Advancement of Science; *Health Framework for California Public Schools from the California Department of Education* (1994); the Report of the 1990 Joint Committee on Health Education Terminology, from JCHET (1990); the *Michigan Essential Goals/Objectives for Health Education* (1988) from the Michigan State Board of Education; and the National Science Education Standards (draft 1994) from the National Committee on Science Education Standards and Assessment.

Selection of the Reference Document

National Health Education Standards: Achieving Health Literacy was used as a reference document. However, some basic content information was also drawn from the Michigan and California documents identified above, and supporting material (as well as some primary material) came from the two science documents, National Science Education Standards and Project 2061's *Benchmarks.*

Identification of Standards and Benchmarks

At the benchmark level, information was derived from *National Health Education Standards* and from all other reports cited above. These reports, except for the California framework, which was more curricular in scope, provided relatively straightforward descriptions of knowledge and skills recommended for health education. Consequently, most of the effort in the identification of benchmarks for health education centered on the synthesis and citation of information from multiple sources.

After the content review, those benchmark items that arose in all the reports were analyzed and grouped. Thus, the standards were developed working up from the benchmark level. However, for the most part, it was found that the resulting standards were similar to the topic level recommendations found in the *Report of the 1990 Joint Committee on Health Education Terminology.* In addition to these topic areas, a standard on Growth and Development was added, derived largely from information in the two science documents, Science Standards and Project 2061's *Benchmarks for Science Literacy.*

Integration of Information from Other Documents

As mentioned above, material from the other documents was not only integrated with the reference material, but new material was added from them as well. This was done when information was found to be present in more than one of the selected reports. It should be noted, however, that all benchmark information from the reference document, the National Health Education Standards, will be found in this report.

Physical Education

(http://www.mcrel.org/standards-benchmarks/standardslib/phyed.html)

The following process was used to identify standards and benchmarks in the field of physical education:

Identification of National Reports

Three reports were identified as useful documents for identifying physical education standards: *Moving into the Future: National Standards for Physical Education: A Guide to Content and Assessment* (1995) and *Outcomes of Quality Physical Education Programs* (1992), both from the National Association for Sport and Physical Education (NASPE); and *Physical Education: Working Draft Content Standards and Benchmarks* (1995) from the state of Michigan's department of education.

Selection of the Reference Document

The NASPE's *Moving into the Future: National Standards for Physical Education: A Guide to Content and Assessment* (1995) was selected as reference document for identifying standards and benchmarks. The Standards were developed with the input of physical education professionals across the country. The work was also based on the *Outcomes of Quality Physical Education Programs* (1992) from NASPE.

Identification of Standards and Benchmarks

The *Standards* work shares a number of features with our model for the identification of benchmarks and standards. First, the standards statements in the document are expressed at an appropriate level of generality, since they are stated broadly enough to allow for benchmark statements to be articulated across K–12. In addition, beneath each standard, the document provides various descriptions of the knowledge and skills that students should acquire from K–12, stated for selected developmental levels.

There were a few areas, however, in which the document was not directly compatible with our approach. Beneath each standard, student knowledge and skill is described in several sections: a paragraph summarizing the knowledge and abilities expected for the grade range under discussion; a more specific list of those skills that should receive particular emphasis; and sample "performance benchmarks," assessment examples, and criteria for assessment. Frequently, it was necessary to take information from several of these sections in order to construct each benchmark. This was done, for example, when the assessment criteria section could provide additional information on the knowledge or skills identified, or when material from still another section helped to make a benchmark less narrow in scope, or when specific examples of the kind of knowledge and skills required was found to be useful. In addition to this modification in the content, some changes for the grade range of the material were necessary. The reference work has six levels: kindergarten, and grades 2, 4, 6, 8, 10, and 12. Because our benchmarks are at primary, upper elementary, middle, and high school, we adopted the following method for aligning the grade levels between the two documents in order to maintain as much grade-specific information as possible. For the primary grades (level I), the information from grade 2 of the reference material was our primary source, but it was supplemented with information from kindergarten for any descriptions of knowledge or skill that weren't encompassed by the material at grade 2. Similarly, for our level II, we identified grade 6 as the primary source of information, using grade 4 material from the reference document wherever material was found that was not presented at grade 6. Middle school (level III) was defined as grades 7–8 and was taken solely from grades 7–8 in the reference work; high school (level IV) was identified from the material at grades 10 and 12, again using the material from the earlier grade to supplement information taken primarily from the later grade.

Integration of Information from Other Documents

Additional material from NASPE was also used and cited in many benchmarks. Their 1992 *Outcomes* document provided us numerous examples or elaborations on material found in the *Standards* document. Also useful was a working draft on physical education from Michigan's department of education. This draft was found to provide some explanatory detail we found useful in identifying benchmarks from the NASPE material. The Michigan document was cited not only in those instances where supplemental material was gained, but also wherever similar benchmark information was found in the document.

Behavioral Studies
(http://www.mcrel.org/standards-benchmarks/standardslib/behav.html)

The following process was used to identify standards and benchmarks in the field of behavioral studies:

Identification of National Reports

Two reports were found to be useful for the identification of standards in behavioral studies, by which we mean content related to sociology, psychology, and social anthropology. These reports are *Benchmarks for Science Literacy* (AAAS, 1993) and *Expectations of Excellence: Curriculum Standards for Social Studies* (National Council for the Social Studies, 1994).

Selection of the Reference Document

Project 2061's *Benchmarks* document was selected as the reference document. This report provides content information in the behavioral sciences that is articulated across four grade ranges. The NCSS social studies book, by contrast, is more oriented to the development of curriculum; that is, the content is more generally stated and geared toward the organization rather than the description of specific knowledge and skills.

Identification of Standards and Benchmarks

Benchmarks for Science Literacy shares a number of features with our model for the identification of standards. Statements labeled "Literacy Goals" are pitched at a level of generality that accords with our level for standards, which means that material beneath each "Goal" is articulated across K–12. In addition, Benchmarks provides developmentally appropriate content at grade levels K–2, 3–5, 6–8 and 9–12, a range that corresponds with our preference for benchmarks at primary, upper elementary, middle, and high school.

Much material in *Benchmarks* focuses on earth, physical and space science. But the work also contains useful material in other areas, including the behavioral sciences, hence this section on behavioral studies. Material from the Benchmarks document was altered primarily when the original statements carried more than one basic idea, or when stylistic changes helped the sense of the statement.

Integration of Information from Other Documents

Other science organizations and agencies do not address standards and benchmarks for the behavioral sciences; thus, no additional material was available to complement the *Benchmarks* standards. Once the benchmarks and standards were identified, however, the material was compared with NCSS's *Curriculum Standards.* Though somewhat more generally stated, the information from the NCSS standards was found to support many of the same ideas. Citations to that document are provided for those who use the *Curriculum Standards* but would like more specifically stated content.

Life Skills
(http://www.mcrel.org/standards-benchmarks/toc/lifeskll.html)

Life skills describes a category of knowledge that is useful across the content areas as well as important for the world of work. This category is comprised of four areas: Thinking and Reasoning, Working with Others, Self-Regulation, and Life Work.

Thinking and Reasoning

The following process was used to identify standards and benchmarks in the category of thinking and reasoning:

Identification of Target Reports

No single document was used as the reference report for standards and benchmarks in the thinking and reasoning category. Rather, those statements that were judged to articulate thinking and reasoning processes that can be applied across content areas were extracted from the various documents reviewed. The following documents have been used to construct standards and benchmarks in the thinking and reasoning category:

- *Incomplete Work of the Task Force of the Standards Project for English Language Arts* (Standards Project for the English Language Arts, 1992).
- *Benchmarks for Science Literacy* (Project 2061, 1993).
- *What Work Requires of Schools: A SCANS Report for America 2000* (The Secretary's Commission on Achieving Necessary Skills, 1991).
- *Workplace Basics: The Essential Skills Employers Want* (Carnevale, Gainer & Meltzer, 1990).
- *Curriculum and Evaluation Standards for School Mathematics* (NCTM, 1989).
- *Mathematics Assessment Framework for the 1994 National Assessment of Educational Progress* (NAEP, 1992).
- *Building a history curriculum: Guidelines for teaching history in the schools* (Bradley Commission on History in the Schools, 1988).
- *Democracy through Language* (NCTE, 1989).
- *Geography for Life: National Geography Standards* (Geography Education Standards Project, 1994).
- *National Standards for History for Grades K–4: Expanding Children's World in Time and Space* (NCHS, 1994).
- *National Standards for United States History: Exploring the American Experience* (NCHS, 1994).
- *National Standards for World History: Exploring Paths to the Present* (NCHS, 1994).
- *Expectations of Excellence: Curriculum Standards for Social Studies* (NCSS, 1994).

Identification of Standards and Benchmarks from Target Reports

Explicit statements of thinking and reasoning were identified in all target reports. To illustrate, consider the following statements from NCTM's *Curriculum and Evaluation Standards for School Mathematics* (1989):

- make and test conjectures
- formulate counter examples
- follow logical arguments
- judge the validity of arguments
- construct simple valid arguments

Each of these statements represents a reasoning process or subprocess that could be used in a variety of subject areas. For example, one could judge the validity of arguments or construct simple valid arguments in mathematics, in science or in history. Statements such as these found in any document were extracted and used as the statement base from which the thinking and reasoning standards were constructed. In addition to explicit statements of general reasoning processes like those above, implicit statements of general thinking and reasoning processes were also identified. For example, the NCTM document contains the following statement:

- formulate problems from everyday and mathematical situations (p.23)

In this case, the thinking and reasoning process was made explicit:

- formulate problems within a variety of situations

In summary, both implicit and explicit statements of general thinking and reasoning processes were used to construct the standards and benchmarks in the thinking and reasoning category. It is again important to emphasize that our listing of these processes is not meant to imply that thinking and reasoning can or should be addressed in isolation of domain-specific content. However, providing a listing of generalized processes allows a school or district to distribute thinking and reasoning processes systematically throughout the various content domains. Additionally, it is our hope that a listing such as ours will help schools and districts break the perceptual set regarding many thinking and reasoning processes. For example, it is usually assumed that problem solving should be assigned exclusively to the domain of mathematics and hypothesis testing exclusively to the domain of science. However, careful examination of the standard in this section entitled "applies basic trouble-shooting and problem-solving techniques" will show that it is applicable to many domains as is the standard "understands and applies basic principles of hypothesis testing and scientific inquiry."

Working with Others

The following process was used to identify standards and benchmarks in the category of working with others:

Identification of National Reports and Reference Documents

The category of standards entitled "working with others" deals with skills and abilities that are associated within groups and with those skills and abilities associated with effective interpersonal communications. Even though many of the national reports mentioned the need for students to work in cooperative environments and use interpersonal communication skills, it was primarily those reports from the domain of workplace literacy that identified specific skills and abilities that should be demonstrated by students. Two documents from this domain were selected as the reference reports for this category: *What Work Requires of Schools: A SCANS Report for America 2000* (The Secretary's Commission on Achieving Necessary Skills, 1991) and *Workplace Basics: The Essential Skills Employers Want* (Carnevale, Gainer & Meltzer, 1990). These documents were selected as co-reference documents because of their similar purpose and format. *Workplace Basics* places heavy emphasis on this category of standards, although it does not explicitly identify a category referred to as "working with others." Rather, it articulates related categories such as interpersonal skills, negotiation skills, teamwork, and listening and oral communication skills. The SCANS report identifies working with others as one of the five general competencies important in the workplace. Within this category it lists such areas as: participates as a team member, teaches others new skills, and exercises leadership.

Additionally, one content-area document contained explicit statements of what students should know and be able to do while working with others: *Expectations of Excellence:*

Curriculum Standards for Social Studies (NCSS, 1994). Also, the document from NCTE entitled *Democracy through Language* (1989) contained general references to the skills students should exhibit while working with others.

Identification of Standards and Benchmarks and the Integration of Information from Other Documents

Both the SCANS report and *Workplace Basics* articulate skills and abilities at a level of generality highly compatible with the specific declarative, procedural and contextualized structures that serve as the foundation for the standards and benchmarks identified in this report. However, one convention adopted by both reports was not compatible with this study. Specifically, neither report identifies the levels at which articulated skills and abilities should be emphasized. The SCANS report simply notes that all identified skills and abilities should be reinforced at kindergarten through 12th-grade levels; Workplace Basics lists the skills and abilities it identifies as important for graduation. Rather than arbitrarily identify the levels at which the various skills and abilities should be emphasized, we adopted the convention of placing them all at level IV (Grades K–12). Thus, a school or district wishing to adopt the skills and abilities in this section would need to devise a system to determine appropriate benchmark levels.

Self-Regulation

The following process was used to identify standards and benchmarks in the category of self-regulation:

Identification of National Reports and Reference Documents

Self-regulation standards include skills and abilities that address executive and metacognitive functions such as setting and monitoring goals and maintaining a healthy sense of self. Because of their similar purpose and format, two documents were identified as co-reference reports for this category of standards: *What Work Requires of Schools: A SCANS Report of America 2000* (The Secretary's Commission on Achieving Necessary Skills, 1991) and *Workplace Basics: The Essential Skills Employers Want* (Carnevale, Gainer & Meltzer, 1990). Although neither document contains a category referred to as self-regulation per se, both contain categories that are strongly related. For example, the SCANS report lists skills and abilities in the general areas of setting goals, managing resources, self-esteem and self-management. *Workplace Basics* describes skills and abilities in categories such as self-esteem, goal setting, motivation and learning to learn.

Identification of Standards and Benchmarks

Both documents report their skills and abilities at levels highly compatible with the format for benchmarks adopted in this study. That is, both documents present statements that are easily translated into specific elements of declarative, procedural and contextual knowledge. Neither document, however, describes the levels at which their identified skills and abilities should be emphasized. Rather, both allude to the fact that all skills and abilities should be acquired by students by the time they graduate. The declarative, procedural and contextual elements in this category were assigned to level IV (Grades K–12). The knowledge and skills were identified as important across all grade levels. For a discussion of grades and the levels to which they are assigned, see Section 6.

Life Work

The following process was used to identify standards and benchmarks in the category of life work:

Identification of National Reports and Reference Documents

Standards in the life work category encompass those skills and abilities commonly considered necessary to secure and maintain employment. Two co-reference documents were selected for this category of standards because of their similar purpose and format: *What Work Requires of Schools: A SCANS Report for America 2000* (The Secretary's Commission on Achieving Necessary Skills, 1991) and *Workplace Basics: The Essential Skills Employers Want* (Carnevale, Gainer & Meltzer, 1990). As their titles indicate, both documents are explicitly designed to provide students with guidance in terms of those skills that are valued and expected in the marketplace. In fact, *Workplace Basics* lists as one of its sixteen categories of skills, Employability-Career Development. In addition to these reports, one report was found to be unique in providing a useful description of basic computing skills essential for employment: *National voluntary skills standard: Hazardous materials management technology* (Center for Occupational Research and Development, 1995). Another report, *Benchmarks for Science Literacy* (Project 2061, 1993) was identified as relevant to this category.

Identification of Standards and Benchmarks and Integration of Information from Other Documents

Although both reference documents list skills and abilities at a high level of specificity that renders them quite compatible with the structure of standards used in this study, neither identifies the level at which these skills and abilities should be addressed. Consequently, with one exception, the elements listed under the standards in this section are all assigned to level IV (grades 9 12). The one exception is the standard entitled "Makes effective use of basic tools." All components for this standard were drawn from the document *Benchmarks for Science Literacy* (1993), which lists skills and abilities by grade level.

Achieve—Governors and Business Leaders Announce Formation of ACHIEVE

National Information Clearinghouse to Serve as Resource to States and Business Leaders Seeking to Improve Academic Standards and Performances-(http://www.summit96.ibm.com/achieve.htm)

Washington, D.C.—Members of the planning committee of the 1996 National Education Summit today announced the formation of ACHIEVE, a resource center designed to assist states and business leaders working to raise academic standards, improve assessments, and increase accountability.

The announcement was made following a regular meeting of the 1996 National Education Summit planning committee, which has continued to meet to ensure that commitments made at the Summit are acted upon. To be located in the Washington, D.C. metropolitan area, ACHIEVE will have a small staff and will be independent of any existing organizations.

ACHIEVE has five stated goals. It will:

1. Provide national leadership on the issues of high academic standards, assessments, accountability, and effective use of technology to achieve high standards;
2. Prepare and make publicly available an annual report that tracks progress made toward achieving the commitments made at the 1996 National Education Summit;
3. Establish and manage an electronic clearinghouse of information on academic standards, assessment tools and accountability systems used by various states and countries;
4. Provide a benchmarking program to compare standards and assessment tools among states and internationally; and
5. Provide technical assistance to states seeking to establish and meet higher academic standards.

According to organizers of the 1996 National Education Summit, ACHIEVE has already received pledges of financial support totaling approximately $5 million from corporations and foundations, including AT&T, BellSouth Corporation, The Boeing Company, Eastman Kodak Company, IBM Corporation, The Proctor & Gamble Company, Mobil Corporation, United Parcel Service, and The Pew Charitable Trusts.

The 1996 National Education Summit was held March 26–27 at the IBM Conference Center in Palisades, New York. The Summit was attended by 41 state governors, 49 business leaders, and 34 resource participants, as well as President Bill Clinton. At the conclusion of the Summit, the governors and business leaders voted unanimously to adopt a policy statement calling for all states to establish internationally competitive academic standards, assessment tools, and accountability systems within two years. In addition, business leaders committed to change their hiring practices to consider a potential employee's high school academic transcript in making hiring decisions and to take into consideration the quality of a state's standards when making business location or expansion decisions.

Additionally, the policy statement called for the establishment of “an external, independent non-governmental group to serve as a national clearinghouse and resource center for states,” which served as the impetus for the creation of ACHIEVE.

Members of the founding Board of Directors of ACHIEVE are as follows:

Co-Chairpersons:

Tommy G. Thompson, Governor of WisconsinLouis V. Gerstner, Jr., Chairman and CEO, IBM Corporation

Co-Vice Chairpersons:

Roy Romer, Governor of ColoradoJohn E. Pepper, Chairman of the Board and Chief Executive, The Proctor & Gamble Company

Additional Board Members:

John Engler, Governor of MichiganBob Miller, Governor of NevadaJames B. Hunt, Jr., Governor of North CarolinaGeorge V. Voinovich, Governor of OhioRobert E. Allen, Chairman and CEO, AT&TJohn L. Clendenin, Chairman, BellSouth CorporationGeorge

M.C. Fisher, Chairman, President and CEO, Eastman Kodak CompanyFrank Shrontz, Chairman, The Boeing Company

According to Summit organizers, 30 states have already submitted their standards and testing tools to be listed on the electronic clearinghouse, which will be accessible to the public. Additionally, since the National Summit, Alaska, Connecticut, Florida, Georgia, Kansas, Michigan, Nebraska, Nevada, New Jersey, New York, and North Carolina have held or plan to hold their own statewide education summits.

The 1996 National Education Summit was conceived following a speech by Louis V. Gerstner, Jr. at the 1995 annual meeting of the National Governors' Association (NGA). In response to Mr. Gerstner's call for business and the public to come together, then NGA Chairman Governor Tommy G. Thompson of Wisconsin and Governor Bob Miller of Nevada offered to co-chair the Summit with Mr. Gerstner.

The Status of State Standards

(http://www.mcrel.org/standards-benchmarks/states.html)

This is an excerpt from the recently published book, *A Comprehensive Guide to Designing Standards-Based Districts, Schools, and Classrooms* by Robert J. Marzano and John S. Kendall. See this page's companion, A Survey of State Standards-Setting Efforts, which is the online version of the book's Appendix B. For more information about the book and how to order it, see this page.

In addition to national documents that identify standards and benchmarks in various content areas, most states have identified standards and benchmarks or are in the process of identifying standards and benchmarks (Gandal, 1995a, 1995b). State efforts to create standards were given an impressive endorsement at the second education summit (http://www.summit96.ibm.com/) in Palisades, New York, in March 1996 when the state governors committed to designing standards and sharing conceptual and technical information regarding their efforts (National Governor's Association, 1996). These actions are consistent with the opinions of those educators who believe that it is at the state level that the standards movement will either succeed or fail. As education reporter Lynn Olson (1995a) notes:

> The U.S. Constitution makes it clear: States bear the responsibility for educating their citizens. They decide how long students continue their education and how the schools are financed. They control what is taught, what is tested, which textbooks are used, and how teachers are trained. Thus, despite all the talk about national education standards, it is the 50 individual states that ultimately will determine what students should know and be able to do. (p. 15)

It is probably accurate to say that most states would prefer not to simply adopt standards set by national organizations. For example, Fred Tempes, an associate superintendent in the California Department of Education explains, "I guess like most states we'd like to feel that we can set our own standards" (in Olson, 1995a, p. 15). Olson notes that 46 states have applied for federal grants under the Goals 2000: Educate America Act. Thirty-one states began work on identifying standards in 1991. As of April 1995, most of those states were still in the process of drafting or reviewing their standards. In spite of these impressive findings, state efforts to set standards are inconsistent. According to studies conducted by the

American Federation of Teachers (AFT) (see Gandal, 1995a, 1996), there is both good news and bad news regarding state efforts to set standards. "The good news," AFT President Albert Shanker says, "is that the movement to upgrade academic standards has taken hold all across the country" (in Innerst, 1995, p. A4). The bad news is that the state level attempts vary in terms of quality and level of effort. To date, the AFT has completed two studies of state efforts to construct standards. The first, entitled *Making Standards Matter: A Fifty-State Progress Report on Efforts to Raise Academic Standards,* was published in 1995 (see Gandal, 1995a). That initial study reported the following findings:

- Every state except Iowa is engaged in developing academic standards. Iowa has not set standards, opting for standards to be set by local schools and districts.
- Thirteen states have standards that are clear and specific enough to form the basis of core curriculum. The states with the clearest standards are California, Colorado, Georgia, and Virginia.
- Thirty-one states have or will have students' assessments linked to standards, but many of those standards are too vague.
- Seven states have taken steps to evaluate their standards against those of countries with high-achieving students. (in Innerst, 1995, p. A4)

The second report, entitled *Making Standards Matter, 1996: An Annual Fifty State Report on Efforts to Raise Academic Standards,* was published in 1996 (see Gandal, 1996). On the positive side, the report noted that a great deal of work had been done since the first report:

> The tremendous amount of activity we've seen in the states over the past year is another strong indicator of the national commitment to raising academic standards. Over two-thirds of states have developed new or revised documents since we issued our report last year. Most of these states have come out with new documents in all four core subjects while some states have issued new standards in a few subjects. (p. 13)

However, the report concluded that state efforts are still far from acceptable. The report (see Gandal, 1996) noted the following:

- Forty-eight states are engaged in developing academic standards. (In addition to Iowa, since the publication of the 1995 report, Wyoming has decided against the construction of state standards.)
- Fifteen states have standards in all four core subject areas (i.e., English, history, mathematics, science) that are clear and well grounded in content.
- Forty-two states either have assessments or are in the process of developing assessments linked to their standards, but the standards are not strong enough in most of these states to provide a solid foundation for the assessments.
- Only twelve states have looked at what is expected of students in other countries, while developing their own standards, although more states recognize the need for internationally competitive standards.

(See the A Survey of State Standards-Setting Efforts (Appendix B) (http://www.mcrel.org/standards_benchmarks/survey.html) for a thumbnail sketch of the results of McREL's survey.) The most damaging finding in both reports is that most state documents simply have weak standards. To illustrate, the 1996 report offers the following as an example of a strong mathematics standard: "The student will differentiate between area and perimeter and identify whether the application of the concept of perimeter or area is appropriate for a given situation" (Gandal, 1996, p. 16). Conversely, a weak mathematics standard from another state document is "Students should be able to represent and solve problems using geometric models (Gandal, 1996, p. 16). This lack of specificity in state documents has caused significant opposition to the standards movement. Standards expert Matthew Gandal (1995b) explains that the 1992 Common Core of Learning standards in Virginia and the 1991 Student Learning Outcomes in Pennsylvania were so vague as to be judged as nonacademic by the constituents of those states. This perception led to the defeat of the entire reform package in those states and the redrafting of more specific standards in both states. If we accept the findings of the AFT reports, then the support and guidance that can be expected from state-level documents is relatively limited. The vast majority of states have standards that are so vague that they will probably have to be reworked or even totally rewritten by schools and districts in those states. Even in the 15 states whose standards were judged to be specific enough, districts still most likely will have to supplement their state standards. For example, Colorado was judged by AFT to have standards that are specific enough to be used by schools and districts. However, the Colorado standards are stated at four levels: K–2, 3–5, 6–8, and 9–12. If a school or district in Colorado wishes to construct grade-level benchmarks (i.e., separate benchmarks for each grade level), it will have to extrapolate the four Colorado levels to 12 levels. Finally, most state documents are presented as guidelines to be used by local districts rather than as mandated standards that must be followed without alteration. Only three states will hold students accountable for meeting standards prior to high school graduation; less than half of the states require or plan to require students to pass high school graduation exams linked to their standards, and only nine states will require students to pass graduation exams linked to their standards in all four core subjects (Gandal, 1996). Consequently, even where a sound state standards document exists, the schools and districts in that state might still find it necessary to engage in a great deal of standards writing and redesign if they wish to implement a standards-based approach.

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GOVERNMENTAL RESOURCES

Developing Educational Standards

US Department of Education

The department's excellent web site (http://www.ed.gov/) has a huge amount of good information for teachers, administrators, students, parents, and the general public about a wide range of educational activities, research, funding opportunities, and news. Some of it is dated, but most is current and extremely relevant. Good places to go on this site include:

- Goals 2000 Legislation and Related Items (http://www.ed.gov/G2K/)-Contains links to Goals 2000 updates and various documents about standards.
- News from ED (http://www.ed.gov/G2K/)-Regularly updated announcements about DOE reports, some of which deal with standards.
- State Curriculum Frameworks and Content Standards (http://www.ed.gov/offices/OERI/statecur/)(Draft, September 1995)-Brief description of various proposed frameworks and standards projects prepared with funding from DOE and Eisenhower National Program for Mathematics and Science Education. (also see www.achieve.org) This site has links to documents for the following states:
    - Alaska-social studies, English/language arts, the arts, foreign language, math, science.
    - Arizona-social studies, science, math.
    - Arkansas-general information.
    - California-social studies.
    - Colorado-social studies, English/language arts,, foreign language.
    - Connecticut-the arts, geography.
    - Delaware-social studies, math, science.
    - District of Columbia-English/language arts,, social studies, math, science, technology.
    - Florida-general information.
    - Kansas-English/language arts,
    - Louisiana-math, science.
    - Maine-math, science.
    - Maryland-English/language arts.
    - Massachusetts-math, science.
    - Michigan-English/language arts, social studies, math, science.
    - Minnesota-the arts.

- Montana-the arts, English/language arts.
- Nebraska-the arts, foreign language, math, science.
- New Jersey-math.
- New York-math, science, technology.
- North Dakota-English/language arts.
- Ohio-the arts.
- Oregon-English/language arts, social studies, foreign language, the arts, math, science.
- Pennsylvania-general information.
- Rhode Island-math, science.
- South Dakota-general information.
- Texas-English/language arts.
- Vermont-social studies, English/language arts, the arts.
- Wisconsin-English/language arts, foreign language, social studies, the arts, math, science.

Additional DOE information about standards appears on its gopher, including:

- Goals 2000 Initiatives (gopher://gopher.ed.gov:10001/11/initiatives/goals/)-A significant number of relevant notices and articles.
- ED/OERI Publications-Full Text (gopher://gopher.ed.gov:10001/11/publications/full_text/)-Many reports, some of which deal with standards and frameworks (for example, the National Arts Standards (draft)[gopher://gopher.ed.gov:10001/11/publications/full_text/atrs]).

Relatedly, the Training Technology Resource Center (http://www.ttrc.doleta.gov/), under US Department of Labor sponsorship, has a Skill Standards & Certification (http://www.ttrc.doleta.gov/skillstd.html) page that describes the projects and has links to both US and foreign resources. Completed US standards are linked to an industry standards summary (http://www.ttrc.doleta.gov/database/research-lib/SKILLSTD/INDUSTRYSTD-SUMMARY.html) page. Several other DOE resources about standards are:

- Goals 2000: A Progress Report (http://www.ed.gov/pubs/goals/progrpt/index.html)
- Goals 2000: Increasing Student Achievement Through State and Local Initiatives (http://www.ed.gov/G2K/GoalsRpt/)(published on April 30, 1996)-The first update on how states have used Goals 2000 funds.
- Example of an Academic Content Standard (http://www.ed.gov/pubs/StratPln/academic.html)
- How New Voluntary National Standards Will Improve Education (gopher://gopher.ed.gov:10001/00/initiatives/goals/overview/file8)
- Misconceptions About Goals 2000 (gopher://gopher.ed.gov:10001/00/initiatives/goals/myths)

- High Standards for All Students (http://www.ed.gov/pubs/studstnd.html)
- Sites Offering Academic And Skill Standards (http://www.ed.gov/G2K/standard.html)

The Education Department has its own search (http://www.ed.gov/search.html) site, allowing you to search the department's web document and gophers as well as the National Center for Education Statistics (NCES) gopher. A mid-October 1995 search brought up 40 different documents from the department's web pages. One is an interesting report called Parental Satisfaction With Schools And The Need For Standards (http://www.ed.gov/pubs/OR/ResearchRpts/parents.html)(the title explains the content) from a *1992 Office of Research Education Research Report.*

The DOE maintains its own set of ERIC Digests (http://www.ed.gov/databases/ERIC_Digests/index/). This provides the reader with a searchable list of research summaries. Typing in the word "standards" turns up documents about such topics as social studies, the public perception of standards, and standardized tests. One of the most recent documents is called Opportunity to Learn Standards: Their Impact on Urban Students (http://www.ed.gov/databases/ERIC_Digests/ed389816.html).

National Education Goals Panel

The National Education Goals Panel (http://www.negp.gov/) was set up to monitor progress towards Goals 2000. Part of its charge is to "work with states to develop high academic standards and assessments." The site currently offers its own FAQ, a list of publications, and a report on current progress. The 1996 National Education Goals Report can be downloaded as an Adobe Acrobat file from the publications (http://www.negp.gov/public.html) page.

National Skills Standards Board

The Department of Education and the Department of Labor, beginning in 1992, have funded twenty-two Occupational Skill Standards Projects (http://www.nssb.org/clhouse/pilot.html) (for example: biotechnology, electrical construction, and human service), each designed to identify the key skills needed for American workers to compete in the global economy. This project, the National Skills Standards Board (http://www.nssb.org/), now has its own web site, lists of standards for each skill, and a newsletter (http://www.nssb.org/clhouse/newslet/bg_1.html).

Thomas

Among other things, "Thomas" lets you search both proposed and passed legislation of both the current and last sessions of Congress. An initial search will show the names of all bills containing whatever keyword you typed in. Click on a bill and you can read its text. In addition, you can search the "Congressional Record" in the same way. While such searches will not tell you everything you might want to know about a particular piece of legislation, the results are immediate and the resources you now have at your fingertips are immense. Give these searches a try:

- Search current legislation (http://thomas.loc.gov/home/c104query.html), by typing in the phrase " Goals 2000" in the "Enter query" box. (While you are at it, try "history standards" as well.)

- Search the Congressional Record (http://www.thomas.loc.gov/home/r104query.html). Find out what your congressional leaders are saying about standards and other topics.

National Science Foundation

Statewide Systemic Initiatives (SSI)

Statewide Systemic Initiatives (http://www.ehr.nsf.gov/EHR/OSR/state.html) is a National Science Foundation effort "to encourage improvements in science, mathematics, and technology education through comprehensive systemic changes in the education systems of the states." Its site contains Statewide Systemic Initiatives In Science, Mathematics, & Engineering 1994–1995 (http://www.ehr.nsf.gov/EHR/OSR/state/profiles/toc.htm)-a clickable version of the National Science Foundation's "State Profiles." This is basically a brief description of what each state is doing with to "encourage improvements in science, mathematics, and engineering education through comprehensive systemic change in the education systems of the states." Click on a state to read what that state said it was doing. For the most part, the references to content standards are brief and say no more than that they were doing something at the time the report was prepared. A June 1995 update (http://www.ehr.nsf.gov/EHR/OSR/state/ssinewjn.htm) to this page contains some miscellaneous information about the initiatives along with links to several initiative-related sites throughout the country.

Links to state sites involved with SSI:

- World Wide Web Home Pages of SSI Programs (http://red.www.nsf.gov/HER/OSR/state/ssihmpg.htm)-Lists home pages for nine states and one educational organization.

Links to state sites involved with SSI-like programs:

- SciMathMN (http://www.informs.k12.mn.us/scimathmn.html)-Information and resources from Minnesota, including news about its programs and a SciMathMN listserv.

CENTERS, CLEARINGHOUSE

Center for Applied Linguistics

The Center for Applied Linguistics (http://www.cal.org/), in cooperation with the Teachers of English to Speakers of Other Languages (http://www.tesol.edu/), has developed a set of nine ESL Standards for Pre-K–12 Students (http://www.cal.org/cal/html/eslindex.htm). The standards have three goals, each of which has three attached standards. Clicking on any one takes you to a page that lists the standard; provides descriptors (brief statements that elaborate on the standards); states sample progress indicators for grades pre-K to three, four to eight, and nine to twelve; and offers (or will offer soon) "vignettes"—or sample scenarios for different locales and situations that show how the standards could be used. In addition, TESOL has an ESL Standards for Pre-K–12 Students (http://www.tesol.edu/assoc/k12standards/index.html) page containing links to supplementary documents and instructional ideas.

Center for Research on Evaluation, Standards, and Student Testing

Run out of UCLA, The National Center for Research on Evaluation, Standards, and Student Testing (CRESST)(http://cresst96.cse.ucla.edu/cresst.htm) is one of the best sites on the web for K–12 educational research. Here you can find newsletters and technical reports (mostly in PDF format-which means that when you click on one of them, an Adobe Acrobat document will begin downloading to your computer without advance notice). While the reports generally deal with research about alternative testing techniques (and are definitely worth reading because of that), several refer to the alignment between testing and standards (the NCTM standards, for example).

- CRESST Tech Reports (http://cresst96.cse.ucla.edu/reports.htm)(pdf files). Also available in summary form (http://cresst96.cse.ucla.edu/summary.htm).
- CRESST Newsletters: (http://cresst96.cse.ucla.edu/news.htm) from the fall of 1991 through the current issue, each showing its title but with no elaboration about specific articles. To read any issue, you have to download it in its entirety. The Winter 1994 issue (http://cresst96.cse.ucla.edu/Newsletters/CLW94.pdf) is about standards (and is a 265k PDF document).

You can also search the CRESST databases (http://cresst96.cse.ucla.edu/search.htm)(including the technical report abstracts and titles, the newsletter articles, and an alternative assessments database). If you conduct such a search, using "standards" as the keyword, you should know beforehand that many of the references will be to testing and evaluation standards rather than content or performance standards.

Eisenhower National Clearinghouse for Mathematics and Science Education

The Eisenhower National Clearinghouse (http://www.enc.org/nf_index.htm) has put together one of the richest and most valuable instructional resources for math and science education on the Internet-and not just for standards and curriculum frameworks (for example, check out their sites of the month selections-called The Digital Dozen [http://www.enc.org/classroom/dd/nf_index.htm]). It seems as if every visit reveals some new article, reference work, teaching idea, framework, or classroom activity and it would be easy to spend hours mining the ENC site. Several good paths to follow include (but are not limited to) the NCTM Standards (http://www.enc.org/reform/journals/ENC2280/nf_280dtoc1.htm)(with links to other standards resources) and a great selection of Journal Articles (http://www.enc.org/reform/journals/nf_index.htm) from such sources as *Educational Leadership, Mathematics Teacher, Teachers College Record,* and the *Middle School Journal.* Some articles deal with standards, others with curriculum, the use of technology, and assessment. Clicking on a title takes you to the article. Short of having an extremely extensive personal library, with subscriptions to all these journals, you cannot beat the breadth and quality of information ENC has made available here.

ERIC Clearinghouse on Assessment and Evaluation

The ERIC Clearinghouse on Assessment and Evaluation (http://ericae.net/) has information on assessment, evaluation, statistics, and educational research. The Clearinghouse also provides:

- access to the ERIC Database using the ERIC Search Wizard 2.0 (http://ericae3.educ.cua.edu/scripts/ewiz/amain2.asp) which utilizes the ERIC Thesaurus for easier and more accurate searches.
- an On-line Assessment Library (http://ericae2educ.cua.edu/lib/) you can readily access.
- a section on Goals and Standards (http://ericae2.educ.cua.edu/intboda.htm#Goals), with links to a variety of helpful documents in this area.
- access to search newspapers and magazines for Assessment and Testing articles (http://ericae2.educ.cua.edu/news.htm).

Mid-continent Regional Educational Laboratory (McREL)

The Mid-continent Regional Educational Laboratory (McREL) (http://www.mcrel.org/) is one of the best places to go on the net for educational resources, particularly in the area of standards and frameworks. Some of its best offerings include:

- Standards and Standardization, (http://198.17.205.1/standards-benchmarks/docs/chapter395.html) an excerpt from "Systematic Identification and Articulation of Content Standards and Benchmarks: Update, 1994," helps clarify key terms.
- You can search the McREL Benchmarks and Standards Database.(http://www.mcrel.org/cgi-bin/wasi-benchmarks.pl) Type in a term and get a list of all standards in the database which use that term.
- Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education, (http://www.mcrel.org/standards-benchmarks/) by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document

citations and links to relevant Internet resources (through the McREL Internet Connections) (http://www.mcrel.org/connect/) This is an excellent resource for everyone.

- Eight Questions You Should Ask Before Implementing Standards-Based Education at the Local Level (http://www.mcrel.org/products/eight/), by Robert J. Marzano, is an excellent, brief, and clearly written article that lays out options and makes helpful recommendations about everything from what standards schools should draw on (state, national, other) to methods of evaluation. Everyone should read this.
- New to McREL is the Eisenhower High Plains Consortium for Mathematics and Science (http://www.mcrel.org/hpc/). Keep an eye open for an expansion of this site. Its Summary of Analyzed State Curriculum Frameworks (http://www.mcrel.org/products/sum-cur-fram/), an analysis of math and science frameworks from 33 states (21 for math, 19 for science), helps to both clarify what we mean by standards and curriculum frameworks and to examine the current state of framework development in the fields of science and math. The report is excellent, though somewhat limited in that the latest state framework it incorporates was published in 1992.
- McREL has an extensive index of occupational education sites on its School to Work (http://www.mcrel.org/connect/stw.html) page-including many involved in the Occupational Skills Standards Projects.
- The Fall and Rise of Standards-Based Education (http://www.mcrel.org/products/nasbe/index.html), by Robert J. Marzano and John S. Kindall (prepared for the National Association of State Boards of Education {http://www.nasbe.org/]), is a brief, readable, and excellent history of the standards movement and a review of the best strategies to take in developing and implementing curriculum based on standards. As you might expect, suggestions in the latter part of the article emphasize a "Dimensions of Learning" approach.
- Designing a Sustainable Standards-based Assessment System (http://www.mcrel.org/products/noteworthy/donintro.html), by Don Burger, offers lucid thoughts about change as well as strategies for effective, long-term implementation of curriculum and assessment based on standards.

National Center on Education and the Economy(NCEE)

The NCEE (http://www.ncee.org/)and the University of Pittsburgh's Learning Research and Development Center (http://www.lrdc.pitt.edu/) are involved in a New Standards project that is developing performance standards (including examples) for English/language arts, math, science, and applied learning based on the national standards projects in those areas. From this site you can order the Performance Standards Consultation Draft (http://www.ncee.org/files/nsOrderForm.html) for elementary, middle, and high school grades as separate documents or as a set. Also worth looking at are online copies of National Center Newsletters (http://www.ncee.org/WhatsNew/whatsnew.html)—which currently include one called *The New Standard* and a second called *The Alliance.*

North Central Regional Educational Laboratory (NCREL)

North Central Regional Educational Laboratory (NCREL)(http://www.ncrel.org/ncrel/) Pathways to School Improvement (http://www.ncrel.org/ncrel/sdrs/pathwayg.htm) is a site under development, with a number of good resources currently in place (reports, analyses, instructional ideas, and other information about critical issues in education)—primarily in the fields of science and math—and the promise of more to come. It has:

- A page on Goals and Standards (http://www.ncrel.org/ncrel/sdrs/areas/gs0cont.htm), which primarily has links to other sites.
- An outstanding set of articles, collectively called the *Critical Issues* series, which clearly, concisely, and in an intelligent and very informed manner discuss and explain the new math and science standards using linked references to the standards, explanations of various concepts, and excellent examples. These are pages everyone ought to read.
- Aligning and Articulating Standards Across the Curriculum (Math) (http://www.ncrel.org/sdrs/areas/issues/content/cntareas/math/ma400.htm)
- Aligning and Articulating Standards Across the Curriculum (Science) (http://www.ncrel.org/sdrs/areas/issues/content/cntareas/science/sc400.htm)
- Implementing Curriculum, Instruction and Assessment Standards in Mathematics (http://www.ncrel.org/sdrs/areas/issues/content/cntareas/math/ma600.htm)
- Implementing Curriculum, Instruction and Assessment Standards for Science Education (http://www.ncrel.org/sdrs/areas/issues/content/cntareas/science/sc300.htm)
- The Significance of the NCTM Standards to the Pathways Critical Issues in Mathematics (http://www.ncrel.org/sdrs/areas/issues/content/cntareas/math/ma0.htm)

Northeast & Islands Regional Laboratory (NEIRL)

(http://www.neirl.org/)

Raising standards and writing new curriculum frameworks may have the intent of raising performance but are they sufficient to do so? There is an ongoing debate over the various conditions necessary in the schools and in society as a whole to translate heightened standards into actual, effective practice. Part of this debate is reflected in this report on Opportunity to Learn Standards (http://www.neirl.org/otlsum.html)(a summary; the full text is also available)-especially since the experts themselves are not sure what they mean when they talk about identifying and giving concrete meaning to those conditions, resources, and the like that will make the standards movement effective in helping students learn. The report is well worth reading because it asks the right questions and provokes thought about the viability of the standards movement. Once you finish, visit their Educational Resources (http://www.neirl.org/resources.html) page for reports and links on subjects ranging from educational technology to "Creating New Visions for Schools."

The Regional Alliance Hub for Mathematics and Science Education Reform (The Hub)

The Regional Alliance, also known as The Hub (http://ra.terc..edu/HubHome.html), is coordinated by TERC (http://ra.terc.edu/about_terc/terc.html) and funded by the US Department of Education to provide help in the areas of math and science education. It offers collaborative projects and a wealth of resources in these areas. It also has posted a report by Anne C. Lewis, called Believing in Ourselves: Progress and Struggle in Urban Middle School Reform, 1989–1995 (http://www.middleweb.com/BIOtitlepg.html), that includes a discussion of how standards can successfully fit into middle school reform.

Southwest Educational Development Laboratory (SEDL)

(http://www.sedl.org/)

SEDL heads a Curriculum Frameworks Task Force with the goal of helping states prepare math and science curriculum frameworks. A page called Curriculum Frameworks (http://www.sedl.org/frameworks/welcome.html) has pdf reports of several conferences held in 1994 and 1995 to work toward this goal.

MISCELLANEOUS RESOURCES

2 plus 2: The Home of Mathematically Correct

Mathematically Correct (http://ourworld.compuserv.com/) offers articles and other criticisms of math standards, particularly the NCTM standards and the California frameworks. The group has recently prepared its own draft Mathematics Standards for Kindergarten to Geometry (http://ourworld.compuserv.com/homepages/mathman/kprea.htm), presenting it to the San Diego City Board of Education in January 1997.

Arizona Parents for Traditional Education

The Arizona Parents for Traditional Education (http://www.theriver.com/Public/tucson_parents_edu_forum /), a very conservative group, expresses its opposition to Arizona standards (particularly any ones they can link to either whole language or outcome based education).

Curriculum Frameworks Mailing List Postings

The Regional Curriculum Frameworks Network maintains a message base (http://hub.terc.edu:70/hub/owner/ra/virtual/frameworks) about frameworks which you can read sorted by thread, subject, author, or date. The page is run by The Hub (http://hub.terc.edu:70/), in affiliation with The Regional Alliance (http://hub.terc.edu:70/hub/owner/ra) for Mathematics and Science Education Reform (where the region served includes Connecticut, Maine, Massachusetts, New Hampshire, New York, Puerto Rico, Vermont, and the Virgin Islands).

Daily Report Card

An HTML version of The Daily Report Card (http://www.utopia.com/mailings/reportcard/) News Service's listserv postings, you can search its summaries of recent education news by performing a "find" on any given page and clicking on the relevant article. To get updates on what is going on in the states about standards, do a find on the term "standards." If nothing shows up, try a different month to see what was going on previously.

Education Policy Analysis

Education Policy Analysis (http://olam.ed.asu.edu/epaa/) is a quarterly journal containing thoughtful and sometimes controversial scholarly articles about public education. *Being* Popular About National Standards (http://olam.ed.asu.edu/epaa/v4n10.html), by Michael W. Apple—A review of Diane Ravitch's book, *National Standards in American Education* that appeared in the June 30, 1996 issue of EPA.

Education Week

Education Week (http://www.edweek.org/) went online in early September 1996 (along with its sister publication, Teacher Magazine [http://www.edweek.org/tm/tm.htm)]). Its site contains selected articles, an archive, and a particularly impressive section called In Context (http://www.edweek.org/context/context.htm). This contains background information, a glossary, state level material, and links related to key educational topics, including assessment (http://www.edweek.org/context/topics/assess.htm) and the history standards (http://www.edweek.org/context/topics/history.htm). It appears that this site will become a major source of information about many major issues, including standards.

ERIC Database

The ERIC Clearinghouse on Assessment and Evaluation (http://ericae.net/) has information on assessment, evaluation, statistics, and educational research. The Clearinghouse also provides:

- access to the ERIC Database using the ERIC Search Wizard 2.0 (http://ericae3.educ.cua.edu/scripts/ewiz/amain2.asp) which utilizes the ERIC Thesaurus for easier and more accurate searches.
- an On-line Assessment Library (http://ericae2educ.cua.edu/lib/) you can readily access.
- a section on Goals and Standards (http://ericae2.educ.cua.edu/intboda.htm#Goals), with links to a variety of helpful documents in this area.

Essays about Standards

- Essays on Standards and Assessments (gopher://vmsgopher.cua.edu:70/11gopher_root_eric_ae%3A%5B_a2000.wcs.es%5D) are a number of articles and newsletters on a host of issues surrounding the topics of standards and assessment from ERIC. Several deal with the question of what, exactly, are standards-while others go in depth on portfolio assessment. They are well worth reading.
- Arizona State University reprinted several articles from the "Educational Forum" in 1994 that dealt quite critically with national standards. They are:
  - Constitutional Implications of National Curriculum Standards (gopher://info.asu.edu:70/00/asu-cwis/education/journals/edforum/archchives/arons), by Stephen Arons.
  - Mathematics Standards and Urban Education: Is This the Road to Recovery? (gopher://info.asu.edu:70/00/asu-cwis/education/journals/edforum/archives/tate), by Willaim F. Tate.
- The Idea of Standards (http://dab.psi.net/ChapterOne/pubpolicy/browse/0-8157-7352-8.html), the first chapter of Diane Ravitch's Book, *National Standards in American Education: A Citizen's Guide,* appears on the Dial-a-Book Public Policy Browser (http://dab.psi.net/ChapterOne/pubpolicy/)—a page providing access to the first chapters of books published by generally conservative public policy institutes.
- Assumptions of Standards-Based Reform and Their Implications for Policy and Practice (http://www.rdc.udel.edu/ASSUMPTIONS_EXEC.HTML) is an excellent summary from Delaware of what standards projects ought to try to accomplish. As the summary notes, however, "Unfortunately, in the interest of producing quick results, some states have focused their efforts almost entirely on establishing standards and the attendant assessment and accountability mechanisms, rolling them out in the name of 'systemic' reform."
- The December 1995 issue of Atlantic Monthly (http://www2.theatlantic.com/atlantic/issues/) has a very critical article by Paul Gagnon called, What Should Children Learn? (http://www.theatlantic.com/atlantic/issues/95dec/chilean/chilearn.htm) The author thinks he knows what went wrong with the movement for national standards: professional educators and academics thwarted the public demand to have standards through their fuzzy thinking, political correctness, and active resistance. Now, he feels, it is up to the states to set things right.

- The Eisenhower National Clearinghouse (http://www.enc.org/) has a number of relevant articles and papers on line.

Explorer

Begun with USDOE grant money, Explorer (http://unite2.tisl.ukans.edu/) offers information about math and science software programs, CDs, and print material. From Explorer's home page, you can enter math or science directories either by category or content outline. Both options bring you to a list of relevant resources. You can then click on one to a see a brief description, its correlation with NCTM or NSTA standards, and information about how to get it. In many cases, the resource is a piece of free or low-cost software that you can download directly by clicking on an appropriate word.

Ohio School Board Member

Diana Fessler (http://www.fessler.com/), a member of the Ohio State Board of Education, uses her personal web page to express her opinions on a variety of subjects-including her serious reservations about the Ohio standards.

Opposition

The organizations listed below tend to oppose *Goals 2000* and any effort to develop standards that they feel might be forced onto school districts by the government. While they tend to advocate conservative positions in general, they are not identical in their positions on all educational issues. This is not intended to be an inclusive list of such organizations. If you wish to find others, most of these contain links you can follow.

- 2 plus 2: The Home of Mathematically Correct (http://ourworld.compuserve.com/homepages/mathman/)—Articles and other criticisms of math standards, particularly the NCTM standards and the California frameworks.
- Arizona Parents for Traditional Education (http://www.theriver.com/Public/tuscon_parents_edu_forum/)—A very conservative group, expresses its opposition to Arizona standards (particularly any ones they can link to either whole language or outcome based education).
- Eagle Forum (http://www.eagleforum.org/)—Publishes the Education Reporter (http://www.eagleforum.org/educate/index.html) and Phyllis Schlafly's columns (http://www.eagleforum.org/column/column.html), both of which have printed critiques of standards at one time or another.
- SchoolHouse Talk (http://wworks.com/~pieinc/index.htm)-—A conservative site with links and opinions on major educational topics, including standards (http://wworks.com/~pieinc/stand.htm).

Parents for Public Schools (http://www.pps.net/)

A national organization of community-based (not school-based) chapters working shoulder to shoulder with superintendents, school boards and civic leaders to improve public schools.

The Parent Teacher Association

The PTA (http://www.pta.org/) has published six National Standards for Parent/Family Involvement Programs (http://www.pta/org/issues/stnrdtoc.htm) and has put the standards, a rationale, research results, quality indicators, sample activities, a model parent/family involvement policy, and a lot more on its web site.

The Press

Articles about standards from major news organizations.

- US News Online (http://ww.usnews.com/)
    - The U.S. News School Standards Poll (http://www.usnews.com/usnews/NEWS/STANPOLL.HTM)—A March 1996 special report that found most Americans supporting higher standards but split on the issue of whether there should be national/state or local standards.
    - The Case for Tough Standards (http://www.usnews.com/usnews/ISSUE/STAND.HTM)—An April 1996 issue cover story at the time of the governor's conference on standards in New Jersey.
    - Letters about the April issue (http://www.usnews.com/usnews/ISSUE/29LETT.HTM)
    - The Battle over School Standards (http://www.usnews.com/usnews/news/stan-high.htm)—Contains links to other stories and information.
    - Hard road ahead for school standards (http://www.usnews.com/usnews/NEWS/HARDROAD.HTM)
    - What kids will have to know (http://www.usnews.com/usnews/ISSUE/GRADES.HTM)
    - Search Our Site (http://vws.agtnet.com/usn_find.html)—Type in "standards" to see what other coverage the magazine has on line.
- ERIC Clearinghouse on Assessment and Evaluation provides access to search newspapers and magazines for Assessment and Testing articles (http://ericae.net/news.htm).

ORGANIZATIONS

Achieve

The Achieve (http://www.achieve.org/) Resource Center on Standards, Assessment, Accountability, and Technology describes itself as a private, not-for-profit organization with a mission of helping political and business leaders develop effective educational standards and effective means of assessing the outcomes of instruction based on those standards. (Unanswered is the question of why Achieve does not mention educators in the group of people who are developing effective educational standards and assessments.) According to its web site, Achieve plans to:

- Conduct a critical, confidential review of state standards for any state requesting such assistance.
- Develop a database of information and research about standards and assessment that it will publish on the net.
- Publish an annual review (http://www.achieve.org/fprogre.html) of the progress of standards development and implementation in each state.

American Association for the Advancement of Science

The AAAS (http://www.aaas.org/aaas.html)—through its Project 2061 (http://www.aaas.org/project2061/2061main.htm)-has put up its Benchmarks for Science Literacy (http://www.aaas.org/project2061/bench.htm). These contain benchmarks and a very intelligent and readable discussion of benchmarks as they relate to science, math, technology, and the interaction of all three

American Association of School Administrators

The AASA (http://www.aasa.org/) has a page with News Releases (http://www.aasa.org/newsrel.htm). One, called *Skills* Needed for Life in the 21st Century (http://ww.aasa.org/newrel04.htm), reports on an AASA-commissioned study, "Preparing Students for the 21st Century," which concludes that the development and application of standards will remain important and describes significant skills students will need to master in order to be ready for the next century.

American Association of School Librarians

The American Association of School Librarians (http://www.ala.org/aasl/index.html) and the Association for Educational Communications and Technology (http://www.aect.org/) published the fifth draft of their Information Literacy Standards for Student Learning (http://www.ala.org/aasl/stndsdrft5.html) on October 7, 1996. The document contains nine standards spread across three categories (information literacy, independent learning, and social responsibility). Each standard has between two and four descriptive indicators. The standards and indicators are clearly written and should be very helpful to everyone who teaches, though they are fairly general and will require considerable work building lessons around them.

American Cancer Society

The American Cancer Society (http://www.cancer.org/) has published the *National Health Education Standards* on a site it calls Health for Success (http://www.cancer.org/cshe.html). The standards were prepared by a group of health organizations from throughout the country including the American Cancer Society, the Association for the Advancement of Health Education, the American Public Health Association, the American School Health Association, and the Society of State Direcdtors of Health, Physical Education and Recreation. The site gives access to a number of pages about the standards. The one that is most immediately useful, called CSHE: National Health Education Standards (http://www.cancer.org/cshestud.html) contains seven standards and, for each, a rationale and performance indicators for grades K–4, 5–8, and 9–11.

American Council on the Teaching of Foreign Languages

The ACTFL (http://www.thomson.com/actf/home.html) has a National Standards in Foreign Language Education (http://www.thomson.com/actf/standard.html) page that presents a rationale for the 1996 "Standards for Foreign Language Learning: Preparing for the 21st Century," gives a brief list of eleven standards in five categories (communication, cultures, connections, comparisons, and communities), and provides ordering information for the complete document.

American Federation of Teachers

The AFT's web site (http://www.aft.org/index.htm) contains policy statements and strategies for examining and evaluating state and local standards and curriculum frameworks, particularly on its Why Do We Need Standards? (http://www.aft.org/summit1.htm) page. These include:

- A System of High Standards (http://%22www.aft.org/higstan.htm)—An AFT resolution, passed by the Executive Council in February, that defines and supports standards.
- Find Out How Your State Is Doing (http://www.aft.org/ttable.htm)—An executive summary of the AFT's recently-released statement, Making Standards Matter. It contains the union's conclusions and recommendations.
- Can You Meet World-Class Academic Levels? (http://www.aft.org/wcstand.htm)—Sample test questions from around the world.
- Helping Students in the Middle (http://www.aft.org/middle.htm)—A study and position paper which argues that teaching to standards can improve the achievement of students who are, academically, usually "in the middle."

- Standards of Conduct, Standards of Achievement (http://www.aft.org/rrsum.htm)—Various AFT statements about academic and behavioral standards.
- Judge Your State or District Standards (http://www.aft.org/judge.htm)—AFT criteria the union recommends its members use to made decisions the quality and usefulness about state or local standards.

The AFT updated its 1995 study of standards throughout the country in a new work called Making Standards Matter 1996 (http://www.aft.org/research/reports/standard/index.htm). This study systematically assesses the development of standards, frameworks, and assessments on a state-by-state basis

American Historical Association

The AHA (http://web.gmu.edu/chnm/aha/) has a link to the UCLA standards documents in its K–12 Area (http://web.gmu.edu/chnm/aha/k12.html), but nothing else as of late 1995.

Association of Two-Year Colleges

The American Mathematical Association of Two-Year Colleges (AMATYC) is hosted by the Illinois Mathematics Association of Community Colleges (http://www.richland.ccil.us/imacc/). The IMACC site contains the AMATYC math standards, Crossroads In Mathematics: Standards for Introductory College Mathematics Before Calculus (http://www.richland.cc.il.us/imacc/standards), which contain frameworks and explanatory material about secondary math which are similar to many from the states.

American Music Conference

The AMC (http://www.tmn.com/0h/Artswire/www/AM/nsae.htm) has links to the *National Standards for Arts Education, the National Standards for Music Education, the Opportunity to Learn Standards for Music Education*, and a number of other relevant documents

Association for Educational Communications and Technology

The American Association of School Librarians (http://www.ala.org/aasl/index.html) and the Association for Educational Communications and Technology (http://www.aect.org/) published the fifth draft of their Information Literacy Standards for Student Learning (http://www.ala.org/aasl/stndsdrft5.html) on October 7, 1996. The document contains nine standards spread across three categories (information literacy, independent learning, and social responsibility). Each standard has between two and four descriptive indicators. The standards and indicators are clearly written and should be very helpful to everyone who teaches, though they are fairly general and will require considerable work building lessons around them

Association for Supervision and Curriculum Development (ASCD)

The ASCD (http://www.ascd.org/) provides excerpts from many of its articles and these can be searched by keyword. Go to their Web Search Engine (http://www.ascd.org/wwwwais.html) and type in the word "standards." This will give you a list of articles from which you can pick the ones you want to read.

Brookings Institution

Brookings Instiutution (http://WWW.BROOK.EDU/) has a Hot Topics (http://WWW.BROOK.EDU/PA/HOT/HOTMENU.HTM) section containing articles and opinion pieces by Brookings scholars. One of these scholars is Diane Ravitch, who wrote *50 Ways to Teach Them Grammar* (http:WWW.BROOK.EDU/PA/HOT/RAVITCH.HTM). This argument for national standards originally appeared as an opinion piece in the *Washington Post* on April 11, 1996.

Council for Basic Education (CBE)

The Council for Basic Education (http://www.c-b-e.org/) has set one of its goals as being reviewing various standards projects while a related goal is to help develop standards at a local level. With a motto of "Championing High Academic Standards for All Students," the CBE maintains an Academic Standards (http://www.c-b-e.org/stmenu.htm) page that lists its current projects and services (for example, it will review content standards for you) and a page describing various International Standards Activities (http://www.c-b-e.org/ismenu.htm). In addition, a page called Articles and More (http://www.c-b-e.org/artmenu.htm) currently has three relevant pieces which generally support the development of standards and frameworks. These include a summary of a recent CBE report on the history standards called Review Panels Find History Standards Worth Revising (http://www.c-b-e.org/history2.html) and articles from *Basic Education,* a CBE periodical, called *A Standard Divided is No Standard at All* (http://www.c-b-e.org/kate.html) and Standards? Curriculum? (http://www.c-b-e.org/barth.html).

Council of Chief State School Officers (CSSO)

The CCSSO's site (http://www.ccsso.org/) offers resources on a wide range of educational issues. Those directly relevant to standards and frameworks include:

- Recommendations for the National Education Summit (http://www.ccsso.org/summit.htm)
- Legislative Position Papers and Testimony on Federal Education Issues (http://www.ccsso.org/fededleg.htm)
- Publications (http://www.ccsso.org/ciippub.htm)—Includes recommendations, a resource handbook, and several status reports about standards, all free (you have to order them by mail).

Council of Great City Schools (CGCS)

The CGSC (http://www.cgcs.org/) has references to standards scattered throughout its site-mostly as brief items in its publications. To find what it has currently, go to the CGCS Search Engine (http://www.cgcs.org/search.htm) and enter the word "standards." A link to a page on "Instruction and Standards" was not active as of April 7, 1996.

Education Commission of the States (ECS)

The Education Commission of the States (http://www.ecs.org/) has a K–12 Educational Topics (http://www.ecs.org/ecs/K-12EduTopic.htm) page with links to summaries of longer documents and books published by ECS. In the area of standards, these include *Standards & Education: A Roadmap for State Policymakers* (http://www.ecs.org/ecs/225a.htm).

Education Excellence Network (EEN)

The Education Excellence Network (http://www.edexcellence.net/), sponsored by the Hudson Institute (http://www.a1.com/hudson/), has established a home page as part of its effort to correct what it sees as the "shortchanging" of the nation's children by its schools. Chester E. Finn, Jr. and Diane Ravitch are the co-directors. While focusing on many different issues (foremost of which appears to be charter schools), various parts of this site have articles or short comments about standards. These include:

- Net Notes (http://www.edexcellence.net/netnotes/netnotes.htm)—Short notes about recent developments-some of which deal with standards-abstracted from a monthly publication of the *Network called Network News & Views.*
- Issues and Places (http://www.edexcellence.net/issuespl/issues.html)—An index to topics dealt with in some depth on the site. Some coverage comes from the Network co-directors, some from anonymous sources, and some from readers who can submit updates on a topic or a state for possible inclusion on the site. One of its categories is Standards, Assessments, and Tests (http://www.edexcellence.net/issuespl/subject/standar/standar1.htm).
- Worthy Research (http://www.edexcellence.net/research/research.htm)—Similar in organization to Issues and Places, it is intended as a place to raise and answer research questions. One of its categories is also *Standards, Assessments, and Tests* (http://www.edexcellence.net/resesrch/resstan/resstan1.html).
- Diane Ravitch and Arthur Schlesinger, Jr., The New, Improved History Standards (http://www.edexcellence.net/issuespl/subject/standar/hisstan.html)—A critical approval of the revised history standards. Originally published in the *Wall Street Journal,* April 3, 1996.

Education Leaders Council (ELC)

The Education Leaders Council (http://edreform.com/elc/index.html), formed in 1995 by education leaders from several states, has a few articles and press releases supporting a general move toward the development of standards, primarily at state and local levels.

- Education Leaders Council Releases Standards Primer (http://edreform.com/elc/elc-press/primer.htm)—A press release and document summary.
- Setting Standards: No Need to Wait (http://edreform.com/elc/spring96/standard.htm)—An article in *Opportunity,* the ELC magazine, that advocates the primary role of communities in setting standards for their schools.

Foundation for Teaching Economics (FTE)

The Foundation for Teaching Economics (http://www.fte.org/fte.index.html) has issued the National Voluntary Content Standards for Pre-Collegte Economics Education (http://www.fte.org/standards.html), with twenty standards and benchmarks for grades 4, 8, and 12.

International Technology Education Association (ITEA)

Technology for All Americans: A Project to Develop National Standards for K–12 Technology Education (http://scholar.lib.vt.edu/TAA/TAA.html) is funded by the National Science Foundation and NASA and coordinated by the ITEA (http://www.tmn.com/Organizations/Iris/ITEA.html). A two-phase project, Phase I is trying to define the meaning of "technology" and, therefore, the scope of any subsequent standards. (Is it a discipline of its own or a supplement to other instructions; what content does it cover?; and so on.) During Phase II (http:scholar.lib.vt.edu/TAA/phaseii.html), ITEA will develop model K–12 technology standards along with benchmarks at grades 2, 5, 8, and 12). Future Plans (http://scholar.lib.vt.edu/TAA/future.html) are also described. Finally, this site provides a summary of the project called Technology for All Americans: A Rationale and Structure for the Study of Technology (http://scholar.lib.vt.edu/TAA/execsumm.html).*The Journal of Technology Education* (http://borg.lib.vt.edu/ejournals/JTE/jte.html), sponsored by the ITEA, has several articles about technology standards, including:

- Scenarios for the "Technology Standard." (http://borg.lib.vt.edu/ejournals/JTE/jte-v7n2/editor.jte-v7n2.html) Spring 1996 issue-This "From the Editor" piece celebrates the inclusion of a technology standard in the *National Science Education Standards*, notes that science teachers are probably not prepared to implement it, and argues that this may increase opportunities for technology teachers to work with science teachers and even turn technology education into a required course at every grade level.
- A United Vision: Technology for All Americans (http://borg.lib.vt.edu/ejournals/JTE/jte-v7n2/satchwell.jte-v7n2.html), by Richard E. Satchwell and William E. Dugger, Jr. describes the development of the Technology for All Americans standards project.

Mathematical Association of America

The MAA (http://www.maa.org/), though it is more focused on college teaching than on secondary schools, has published two relevant pieces:

- The MAA and the NCTM Standards: Some Recent History (http://www.maa.org/features/maa_and_nctm.html), by Ken Ross.
- Quantitative Reasoning for College Graduates: A Complement to the Standards (http://www.maa.org/past/ql/ql_toc.html)-an exposition on what every college graduate should know.

MiddleWeb

MiddleWeb (http://www.middeweb.com/), a site sponsored by the Edna McConnell Clark Foundation and devoted to middle level education (with a particular focus on urban middle schools), contains a number of articles dealing with standards.

- Anne Wheelock, Standards-Based Reform: What does It Mean for the Middle Grades? (http://www.middleweb.com/Whlckstand.html)-An extract from a longer article (http://ra.terc.edu/regional_networks/cia/standards/standard-reform.html) appearing at The Hub (http://ra.terc.edu/HubHome.html) that reviews the role of and the future for standards development in middle level education.
- More about Standards-based Education Reform (http://www.middleweb.com/Stndrdsresc.html)-information about or links to resources from other sites.
- The Hayes Mizell Reader (http://www.middleweb.com/Hmreader.html)—Articles or excerpt from speeches by Hayes Mizell (the director of the Program for Student Achievement of the Edna McConnell Clark Foundation) that support the development and implementation of standards but which point out that standards, by themselves, will not reform middle level education.
- Epilogue (http://www.middleweb.com/BIOepilogue.html) from *Believing in Ourselves: Progress and Struggle in Urban Middle School Reform.*
- Standards in Context (http://www.middleweb.com/Standsincntxt.html)
- What It Will Take (http://www.middleweb.com/Standardswork.html)
- Anne C. Lewis, Believing in Ourselves: Progress and Struggle in Urban Middle School Reform, 1989–1995 (http://www.middleweb.com/BIOtitlepg.html)—a report that includes a discussion of how standards can successfully fit into middle school reform.

National Academy of Sciences

The *National Academy Press* http://www.nap.edu/), a publication arm of the National Academy of Sciences (http://www.nas.edu/), has placed the *National Science Education Standards* (http://www.nap.edu/nap/online/nses/html/) on line. (While you can go directly to the standards, NAP asks you to fill out a registration form on an introductory page (http://www.cde.state.co.us/stdbased.htm) before doing so.) These science standards are extensive and comprehensive. The site's table of contents can take you to a history, overview, and rationale for the standards; teaching standards, with some example activities; professional development standards; assessment standards; content standards; program standards; science education system standards; reference material; and credits, an epilogue, and an appendix. Individual pages do much more than follow a typical one or two sentence listing of standards of the kind often found elsewhere. Clear prose explains each standard, suggests teaching strategies, and offers clear and compelling reasons why science should be taught as a hands-on subject. Particularly useful are the numerous links to other pages among the standards documents, making it easy to follow a side path and them come back to the document you started on. This site should serve as a exemplar to other organizations placing their standards documents on line.

National Arts Education Association

The National Arts Education Association's site (http://www.naea-reston.org/) has general resources for art educators and a page, called recent papers (http://www.naea-reston.org/recentpapers.html), containing its position on the arts standards and on other significant topics.

National Association of Secondary School Principals

The NASSP (http://www.nassp.org/) has put up a sample article from the November 1996 issue of Schools in the Middle called Middle Level Principals as Leaders in Standards-Based Reform: Setting Priorities (http://www.nassp.org/news/novsim.htm), by M. Hayes Mizell. The article contains tips for principals who want to make standards based reform work.

National Business Education Association

The National Business Education Association (http://www.nbea.org/partners/nbea/nbea.html) has prepared a document with recommended National Standards for Business Education (http://www.nbea.org/partners/nbea/standard.html). These recommendations, aimed at kindergarten through the first two years of college, deal with what schools should teach in the areas of accounting, business law, career development, communications, computation, economics and personal finance, entrepreneurship, information systems, international business, interrelationships of business functions, management, and marketing.

National Center for History in the Schools

The NCHS (http://www.sscnet.ucla.edu/nchs/ [the source for the major US and European History standards projects]), has the original National Standards for United States History for Grades K–4 (http://www.sscnet.ucla.edu/nchs/usk4-toc.htm) and the National Standards for United States History for Grades 5–12 (http://www.sscnet.ucla.edu/nchs/us-toc.htm), along with an April 3, 1996 press release (http://www.sscnet.ucla.edu/nchs/press.html) about the revised standards.

The National Center on Educational Outcomes

Based out of the University of Minnesota, the National Center on Educational Outcomes (http://www.coled.umn.edu/nceo/) conducts research into the use of assessments to measure education outcomes. It has a particular focus on looking at how programs ensure the equitable participation of all students, including those with disabilities. The site contains a lot of information about the organization. Some of its reports (including one on opportunity to learn standards) can be read on line. Most reports, however, must be ordered before they can be read in their entirety.

The National Communication Association (formerly the Speech Communication Association)

The NCA (http://www.scassn.org/) has placed placed the first of three parts of the Standards for Speaking, Listening and Media Literacy (http://www.scassn.org/K12stdspr.htm) on its web site.

- Speaking, Listening, and Media Literacy Standards for K Through 12 Education (http://www.scassn.org/K12Stds.htm) offers a rationale for the standards, criteria for selecting the standards it includes, twenty-three statements describing skills or actions an effective communicator should be able to demonstrate, and a set of notes that references various relevant articles and books. The standards can also be downloaded as an Adobe Acrobat document (http://www.scassn.org/k-12stds.pdf).
- "Activities for Teaching to the Speaking, Listening and Media Literacy Standards" (not yet available) offers projects and lessons aimed at helping students achieve proficiency.
- "Assessing the Speaking, Listening and Media Literacy Standards" (not yet available) presents evaluation strategies.

National Council on Economic Education

The NCEE maintains an Economics America (http://www.ea-globalnet.org/) site and has helped issue the Voluntary National Content Standards for Economic Education (http://www.economicsamerica.org/nctext.html). This contains 20 content standards, each benchmarked for grades 4, 8, and 12.

National Council for History Education

The NCHE (http://www.history.org/nche/) has issued a call for changes in history teaching called Reinvigorating History in U.S. Schools (http://www.history.org/nche/recommend.html). While the document is brief and speaks broadly to instructional issues, parts of it have implications for social studies standards and frameworks.

National Council for the Social Studies

The NCSS (http://www.ncss.org/online/) has a page showing the title page of its own Expect Excellence: Curriculum Standards for Social Studies (http://www.ncss.org/online/standards/stitle.html), along with ordering information. The organization is also in the process of putting its curriculum standards (http://www.ncss.org/online/standards/toc.html) on line, with the executive summary and sections 1 and 2 currently being available. A note on this page says that the other sections will be on line soon.

National Council of Teachers of English

The NCTE (http://www.ncte.org/) Homepage has links to information about the new English Language Arts Standards (http://www.ncte.org/standards/list.html). Its standards page has ordering information as well as a viewable Professional Summary of the Standards (http://www.ncte.org/standards/profsum.html), which offers a rationale for the whole set of standards and some elaboration on two of the twelve.

National Council of Teachers of Mathematics

The NCTM (http://www.pbs.org/learning/mathline/nctmhome.html) is way ahead of the other professional organizations in putting its standards online. Everything you would want to see for each of the grade groupings, for evaluation, or to find out what is going to happen next is linked through an NCTM Standards page (http://www.enc.online/NCTM/280dtoc.html) maintained by the Eisenhower National Clearinghouse for Mathematics and Science Education. The NCTM home page itself contains links to various articles and op-ed style pieces about standards that have appeared in NCTM journals. It also contains an online questionnaire (http://www.nctm.org/whats_new/standards_future.htm) soliciting comments on a proposal to revise and realign the NCTM standards over the next several years.

For a newsgroup about the NCTM you can read into, check out the NCTM Discussion (http://forum.swarthmore.edu:2222/PublucNewsreading/NewsGroupPages/forum.swathmore.edu/local.nctm-1) at Swarthmore.

National Geographic Society

Buried deep within the rich National Geographic Society site (http://www.nationalgeographic.com/main.wd) lies its Resources for Teachers (http://www.natioalgeographic.com/ngs/geo_ed/geoed34.wd). This page has links to background information (http://www.nationalgeographic.com/ngs/geo_ed/geoed31.wd) on the National Geography Standards, a list of the actual standards (http://www.nationalgeographic.com/ngs/geo_ed/geoed32.wd), and ordering information for the complete document.

National Science Teachers Association

The NSTA (http://www.nsta.org/) home page has information about various activities related to the development of science standards and frameworks. Its Scope, Sequence & Coordination Project (http://www.gsh.org/nsta_ssandc/), hosted by Microsoft's Global Schoolhouse (http://www.gsh.org/), has an extremely comprehensive curriculum-focused site, billed as containing over 2000 pages of high school science teaching resources. The site has extensive sets of lessons and lesson materials for biology, chemistry, earth and space science, and physics-all tied to the National Science Education Standards (NSES) and the NSTA's Scope, Sequence, and Coordination subject areas. You can browse or search the site by topic, keyword, or grade level to find more detailed listings within a topic. These lead to "MicroUnits"—some completed and some still in progress-which contain both teacher and student material, downloadable as Adobe Acrobat files. (This technique, while helpful in offering teachers formatted plans and materials, suffers because you cannot preview any of the microunits online to see which you might like to have and which you do not want. As a result, you have to download files that can be fairly large just to check a unit out.) Completed units have been tested in classrooms and appear to be a gold mine for both new and experienced teachers.

North American Association for Environmental Education

The NAAEE (http://eelink.umich.edu/naaee.html) has ordering information for The NAAEE Standards Project: Papers on the Development of Environmental Education Standards (http://eelink.umich.edu/naaee.pubs.html), by D. Simmons. According to the blurb on their site, "NAAEE is leading an extensive effort to develop EE standards in the areas of materials, student performance, and educator performance. These compiled papers provide a comprehensive look at educational standards efforts and propose logical frameworks for standards." Published in 1994, the book costs $10 for non-members and $8 for members.

Organization of American History

The OAH (http://www.indiana.edu/~oah/) issues a press release (http://www.indiana.edu/~oah/revstands.html) supporting the revised history standards. The OAH also publishes a weekly National Coordinating Committee for the Promotion of History NCC Washington Update (http://www.indiana.edu/~oah/advocacy.html). Some issues have news about the history standards.

The Parent Teacher Association

The PTA http://www.pta.org/) has published six National Standards for Parent/Family Involvement Programs (http://www.pta/org/issues/stnrdtoc.htm) and has put the standards, a rationale, research results, quality indicators, sample activities, a model parent/family involvement policy, and a lot more on its web site.

Phi Delta Kappa

Phi Delta Kappa (http://www.pdkintl.org/home.htm) has placed some of its Kappan articles (http://www.pdkintl.org/karticle.htm) on line, including selections from the January 1997 issue that indirectly speak to the topic of standards while discussing visions of what American education ought to look like. Various PDK Newsletters (http://www.pdkintl.org/newslett.htm) are also online.

Teachers of English to Speakers of Other Languages (TESOL)

The Center for Applied Linguistics (http://www.cal.org/), in cooperation with the Teachers of English to Speakers of Other Languages (http://www.ncbe.gwu.edu/tesol/), has developed a set of nine ESL standards. The March 28, 1996 draft of the ESL Standards for Pre-K–12 Students (http://www.cal.org/cal/htm/eslindex.htm) is now on line. They are actively seeking feedback and have included a "Reviewer Response" form they hope readers will fill out. The standards themselves have three goals, each of which has three attached standards. Clicking on any one takes you to a page that lists the standard; provides descriptors (brief statements that elaborate on the standards); states sample progress indicators for grades pre-K to three, four to eight, and nine to twelve; and offers (or will offer soon) "vignettes"–or sample scenarios for different locales and situations that show how the standards could be used. In addition, TESOL has an ESL Standards for Pre-K–12 Students (http://www.tesol.edu/assoc/k12standards/index.html) page containing links to supplementary documents and instructional ideas.

State Education Departments

- Alabama State Department of Education (http://www.alsde.edu/)
- Alaska Department of Education (http://www.educ.state.ak.us/)
- Arizona Department of Education (http://ade.state.az.us/doe.html)
- Arkansas Department of Education (http://arked.k12.ar.us/)
- California Department of Education Goldmine (http://goldmine.cde.ca.gov/)
- Colorado Department of Education (http:www.cde.statte.co.us/)
- Connecticut Department of Education (http:www.state.st.us/sde/) and the Connecticut State Board of Education (http://cs.aces.k12.ct.us/www/csde/index.html)
- Delaware Department of Public Instruction (http://www.udel.edu/dpi/index.html)
- District of Columbia Public School System (http://www.k12.dc.us/)
- Florida Department of Education (http://www.firn.edu/doe/index.html)
- Georgia Department of Education (http://gadoe.gac.peachnet.edu/)
- Hawaii State Department of Education (http://www.doe.hawaii.edu/upena/)

- Idaho State Department of Education (http://www.sde.state.id.us/)
- Illinois State Board of Education (http:///www.isbe.state.il.us/homepage.html) and the ISBE Gopher (gopher://gopher.isbe.state.il.us:70/1)
- Indiana Department of Education IDEAnet (http:///ideanet.doe.state.in.us/)
- Iowa Department of Education (http://www.state.ia.us/educate/depteduc/index.html)
- Kansas State Board of Education (http://www.ksbe.state.ks.us/)
- Kentucky Department of Education (http://www.kde.state.ky.us/)
- Louisiana State Department of Education (http://www.doe.state.la.us/)
- Maine Department of Education (http://www.state.me.us/education/homepage.html)
- Maryland State Department of Education (http://www.msde.state.m.us/msde/)
- Massachusetts Department of Education (http:info.doe.mass.edu/)
- Michigan Department of Education-MDEnet (http://www.mde.state.mi.us/)
- Minnesota Department of Children, Families and Learning (http://www.educ.state.mn.us/)
- Mississippi Department of Education (http://mdek12.state.ms.us/)
- Missouri Department of Elementary & Secondary Education-MO DESE (http://services.dese.state.mo.us/index.html)
- Montana Office of Public Instruction (http://161.7.114.15/opi/opi.html)
- Nebraska Department of Education (http://www.nde.state.ne.us/) and the Nebraska Gopher (gopher://nde4.ned.state.ne.us/)
- Nevada Department of Education (http://nsn.scs.unr.edu/nvdoe/)
- New Hampshire Department of Education (http://www.state.nh.us/doe/education.html)
- New Jersey Department of Education (http://www.state.nj.us/education/)
- New Mexico State Department of Education (http://www.sde.state.nm.us/)
- New York State Education Department (http://www.nysed.gov/) and the NYS Education Department Gopher (gopher://unix5.nysed.gov/)
- North Carolina Department of Public Instruction (http://www.dpi.state.nc.us/dpihome.html)
- North Dakota Department of Public Instruction (http://www.sendit.nodak.edu/dpi/)
- Ohio Department of Education (http://www.ode.ohio.gov/)
- Oklahoma State Department of Education (http://www.sde.state.ok.us/)
- Oregon Department of Education (http://www.ode.state.or.us//)
- Pennsylvania Department of Education (http://www.cas.psu.edu/pde.html)
- Rhode Island Department of Education (www.ri.net/RIDE/)
- South Carolina Department of Education (http://www.state.sc.us/sde/)

- South Dakota Department of Education and Cultural Affairs (http://www.state.sd.us/state/executive/deca/)
- Tennessee Department of Education (http://www.state.tn.us/other/sed//homepage.html) and the Tennessee Gopher (gopher://gopher.ten.k12.tn.us/)
- Texas Education Agency-WWW/Gopher Server (http://www.tea.state.tx.us:70/)
- Utah State Office of Education (http://www.usoe.k12.ut.us/)
- Vermont Department of Education (http://www.state.vt.us/educ/)
- Virginia Department of Education (http://www.pen.k12.va.us/Anthology/VDOE/)
- Washington Office of the Superintendent of Public Instruction (http://www.ospi.wednet.edu/)
- West Virginia K–12 Home Page—A state site (not the DOE) (Http://access.k12.wv.us/)
- Wisconsin Department of Public Instruction (http://www.state.wi.us/agencies/dpi/)
- Wyoming Department of Education (http://www.k12.wy.us/wdehome.html)

STANDARDS AND FRAMEWORKS BY SUBJECT AREA

Art and Music

By Organization

- **The American Music Conference** (http:www.tmn.com/Oh/Artswire/www/AMC/nase.htm) has links to the National Standards for Arts Education, the National Standards for music Education, the Opportunity to Learn Standards for Music Education, and a number of other relevant documents.
- **ArtsEdge Curriculum Connection** (http:artsedge.kennedy-center.org/db/cc-02.html)-Sponsored by the Kennedy Center, the ArtsEdge site has a Standards/Frameworks and Assessment (http://artsedge.kennedy-center.org/sc/dsgntool.html) page containing the Goals 2000 Arts Standards, a Goals and Standards Resource Directory (http://artsedge.kennedy-center.org/sc/st-index.html), the National Theater Standards, (http://artsedge.kennedy-center.org/db/cr/gs/ns-0001.html) and links to various state and national sites.
- **Education Reform, Standards, and the Arts** (http:www.ed.gov/pubs/ArtsStandards.html) -A summary document from the **U.S. Department of Education** that makes a philosophical argument for standards in the Arts.
- **Mid-continent Regional Education Laboratory** (http://www.mcrel.org/)—The best place to start looking. A typically good place to start is Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education (http://www.mcrel.org/

standards-benchmarks/), by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.ogr/connect/]). This is an excellent resource for everyone.

- **The National Arts Education Association** (http://www.naea.reston.org/)—This site has general resources for art educators and a page, called recentpapers (http://www.naea-reston.org/recentpapers.html), containing its position on the arts standards and on other significant topics
- **National Standards for Arts Education** (gopher://gopher.ed.gov:1001/11/publications/full_text/arts)—Arts standards developed by the Consortium of National Arts Education Associations, they cover the fields of dance, music, theater, and the visual arts. There are separate documents for grades K–4, 5–8, and 9–12 along with some supporting material. The whole set of standards is available for download in a zipped file.

By State

- **Alaska**—In 1994 and 1995, Alaska adopted Content Standards for Alaska Students, (http://www.educ.state.ak.us/ContentStandards/home.html) containing a short list of one-sentence standards for various subjects, including art. In addition, a draft Arts Framework (http://www.educ.state.ak.us/TLS/finearts/arts1.htm) is available, composed of five chapters. Chapter 1 deals with the use of the frameworks and the curriculum development process. Chapter 2 contains background information and definitions on a range of topics. Chapter 3: The Content of the Arts lists several draft standards and their relationship with national standards. Chapter 4: Instruction in the Arts is a large page (208k) that lists specific standards for dance, drama, literary arts, music, and visual arts. Chapter 5: Assessment in the Arts contains guidelines intended to help teachers design their own assessments, followed by pages containing sample assessments in the different arts fields.
- **Arizona**—Draft #3 of the Arts Standards (http://www.ade.state.ar.us/standards/arts.html) contains sections dealing with research and a rationale for the arts and separate sections for music, the visual arts, theatre, and dance. Each of the latter lists standards and performance indicators for readiness (pre-K to K), foundations (grades 1–4), essentials (grades 5–8), proficiency (required for high school graduation), and distinction.
- **Arkansas**—Art Curriculum (http://arkedu.k12.ar.us/user_doc/ade/frame/art.htm)—Its two strands in the visual arts are creating and reflecting/responding. Its four strands in music are create and perform; listen, perceive and analyze; cultural and historical contexts; and connect and apply. Each strand has content standards and learning expectations for grades K–4, 5–8, and 9–12.
- **California**—The California Department of Education put the draft Challenge Initiative standards (http://goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.

- **Colorado**—In August 1996, second drafts of six standards documents went on line through links from the Model Content Standards (http//:www.cde.state.co.us/ftpcde.htm#standards) page-but as pdf files only. The documents are in the fields of the arts (one file each for music and the visual arts), social studies (one file each for civics and economics), foreign language, and physical education.
- **Florida**—The Sunshine State Standards (http://www.ffirn.edu/doe/curric/prek12/frame2.htm), approved by the State Board of Education on May 29, 1996, are available on the Florida Department of Education's web site in the areas of the arts (dance, music, theatre, visual arts), English/language arts, foreign language, health, math, physical education, science, and social studies. Standards for each area are divided into four grade level groupings (Pre-K to 2, grades 3–5, grades 6–8, and grades 9–12), with a web page devoted to each. A typical page contains major subject area topics with relevant standards and their subcategories elaborated upon underneath.
- **Georgia**—Georgia College has placed the Georgia Quality Core Curriculum (http://doc.gac.peachnet.edu/NetFinder/NetFinder.acgi$Root%3Dgathering materials/Quality Core Curriculum%7C%7C) on line in the areas of the arts (dance, drama, music), English, foreign language, health (including AIDS prevention), math, physical education, science, social studies (including Georgia studies and state and local government), and vocational education. These documents typically list several broad categories for each subject area and, for each grade level, various specific yet brief statements that are intended to guide instruction at the local level.
- **Illinois**—The Illinois State Board of Education has created an Illinois Learning Standards (www.isbe.state.il.us/ils/welcome.html) site that contains the June 1997 proposed frameworks in the areas of the arts, English language arts, foreign language, health, math, physical education, science, and social studies. Each disciplinary page has a chart comparing the June 1997 proposals with the July 1996 draft standards and a link to an Adobe Acrobat file of 1997 proposals.
- **Kentucky**— (http://www.kde.state.ky.us/caa/g2arts.html)
- **Louisiana**—The Louisiana Department of Education has released the state's Content Standards (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/constani.htm). This site lets you view them on screen or download them as WordPerfect 6.1 documents. For the screen versions, clicking on Art (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/atabcont.htm) takes you to a page containing an introduction, various supporting documents, and a standards document containing various standards, each of which is followed by an extensive list of benchmarks for grades K–4, 5–8, and 9–12.
- **Maine**—The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/education/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions document listing the changes made since 1996 in each subject area.
- **Massachusetts**—The Arts (http://info.doe.mass.edu/doedocs/frameworks/artstoc.html)-Preface, overview, rationale, strands and learning standards, and selected references.

Broken down by grade groupings (pre-K to 4, 5 to 8, and high school), with a substantial amount of explanatory information and instructional examples.

- **Michigan**—Arts Education (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Arts_Education)—Part of the 1994 draft *Core Curriculum Content Standards*, the document contains an overview, the standards (with brief sample performance tasks or student expectations for early elementary, later elementary, middle school, and high school years), and cross-references to documents from other disciplines. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.
- **Minnesota**—The Department of Children, Families and Learning has created a Graduation Standards (http:///www.educ.state.mn.us/grad/gradhome.htm) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP) page dealing with the Profile of Learning for various grades and subject areas. This page has links to elements of the profile for different grades and sample curricular materials available for download.
- **Missouri**—Fine Arts (http://services.dese.state.mo.us/standards/finearts.html)-A "Show-Me Standards," approved by the State Board of Education as a proposed regulation in mid-October. The page lists general goals, each of which is elaborated on slightly on its own separate page.
- **Nebraska**—The Nebraska Department of Education has a directory called ARTnet (http://nde4.nde.state.ne.us/ARTnet/) which contains part of the state's arts frameworks and some supplementary material.
- **New Jersey**—The New Jersey Core Curriculum Content Standards (http://www.injersey.com/Education/NJDOE/) page contain an introduction followed by five to six standards in each of the different content areas (including Visual and Performing Arts). Each standard has its own page containing a descriptive statement that briefly elaborates on the standard and various progress indicators for grades 4, 8, and 12. These standards were officialy adopted by the state's Board of Education on May 1, 1996.
- **New York**—New York State Curriculum Framework for the Arts (http://www.cnyric.org/standards/arts/arts.html)-Final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others. The State Education Department has mailed out draft curriculum resource guides in several subject areas. Web copies of the guides (http://www.nysed.gov/guides/) can be downloaded as lengthy pdf files in the areas of the arts, English language arts, and mathematics, science and technology.
- **New York City**—NYCENet (http://205.232.151.90/), the New York City Educational NETwork has an Educational Resources (http://205.232.151.90/teach_learn/edrsurse.html) page containing links to various city frameworks. On the Music (http://205.232.151.90/teach_learn/frameworks/music/musicr.html) and Visual Arts (http://205.232.151.90/teach_learn/frameworks/art/artr.html) pages, clicking on a grade level takes you to the appropriate framework and a list of relevant Internet sites.
- **North Carolina**—North Carolina Curriculum Matrix (http://www.dpi.state.nc.us/Curriculum/CrrclmMtrx.html)

- **Ohio**—Transdisciplinary Comprehensive Arts Education (gopher://gopher.ed.gov:10001/00/initiatives/stan-doc/document/state/fund/file/18) A brief document.
- **Oklahoma**—The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS) (http://www.sde.state.ok.us/schimp/effschcurr/passs/pass.html) documents. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.
- **Oregon**—Oregon's Proficiency-based Admission Standards System (http://wpass-osshe.uoregon.edu/), or PASS, contains that state's approach to standards development. PASS grew out of a legislative change in high school graduation requirements from traditional methods, such as Carnegie units, to demonstrations of mastery in certain subject areas. The Oregon State System of Higher Education (OSSHE) offered to prepare standards that would guide college admission and created a group, made up of college and high school staff, that prepared PASS. While the group's work focuses on what is expected of students going to one of Oregon's colleges (and not necessarily what is expected of all high school students), the implication of this project is that all Oregon high schools should follow it. In March 1996, the project released a draft document called Admission Standards: Content & Process Areas Proficiences & Indicators (http://wpass-osshe.uoregon.edu/docs/docs.html) that listed standards (or "proficiences," as they are called in Oregon) in six subject areas, including the fine and performing arts. The draft document is currently under review, with comments being accepted through May 15.
- **South Carolina**—Visual and Performing Arts Curriculum Framework (http://www.state.sc.us/sde/frameworks/art.htm) A list of standards and sample activities for dance, drama, music, and the visual arts.
- **South Dakota**—The South Dakota State Board of Education has a page (http://www.state.sd.us/state/executive/deca/chapter1/chapter1.htm) with a downloadable 147k EXE file containing ten MS Word files with the state's content standards. These working drafts of the standards were submitted to the South Dakota State Board of Education in March,1996 and received a public hearing before the State Board in that June. The South Dakota Content Standards for communications, foreign language, civics, geography, history, fine arts, health, mathematics, and science were formally endorsed by the State Board on June 17, 1996. (If you have a Mac, download the EXE and run it through Stuffit Expander to get files that are readable by either Word 6 or BBEdit.)
- **Texas**—In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS)(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area.

In most cases, the TEKS are scheduled for implementation on September 1, 1998.

- **Utah**—Art (http://www.uen.org/utahlink/UtahCore/Art.html) and Music (http://www.uen.org/utahlink/UtahCore/Music.html) Core Curricula. A set of pages, each of which provides a brief description of courses for different grades along with relevant standards and course objectives for each of those standards.
- **Vermont**—The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.htm) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). In addition, the Flood Brook Union School (http://www.floodbrook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course/sbuofs.html).
- **Washington**—The Washington Commission on Student Learning Home Page (http://csl.wednet.edu/) contains links to relatively brief standards documents called the Essential Academic Learning Requirements (http://csl.wednet.edu/EALR/EALR_note.html). From there you can download summary statements or the full document (in Word 5 form) for the Arts (http://csl.wednet.edu/EALR/Arts.html).
- **Wisconsin**—Wisconsin-The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/) is now on line in pdf format. You can download the standards document as one large file or as smaller topical files.

English/Language Arts

By Organization

- **Mid-continent Regional Education Laboratory**—The best place to start looking. A typically good place to start is Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education (http://www.mcrel.org/standards-benchmarks/), by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.org/connect/]). This is an excellent resource for everyone.
- **National Council of Teachers of English**—The NCTE Homepage has links to information about the new English Language Arts Standards (http://www.ncte.org/standards/list.html). Its standards page has ordering information as well as a viewable Professional Summary of the Standards (http://www.ncte.org/standards/profsum.html), which offers a rationale for the whole set of standards and some elaboration on two of the twelve.
- **National Center on Education and the Economy**—The NCEE (http://www.ncee.org/) and the University of Pittsburgh's Learning Research and Development Center

(http://www.lrdc.pitt.edu/) are involved in a New Standards project that is developing performance standards (including examples) for English/language arts, math, science, and applied learning based on the national standards projects in those areas. From this site you can order the Performance Standards Consultation Draft (http://www.ncee.org/files/nsOrderForm.html) for elementary, middle, and high school grades as separate documents or as a set.

- **The National Communication Association** (formerly the Speech Communication Association)—The NCA (http://www.scassn.org/) has placed the first of three parts of the Standards for Speaking, Listening and Media Literacy (http://www.scassn.org/K12//K12stdspr.htm) on its web site.

- Speaking, Listening, and Media Literacy Standards for K Through 12 Education (http://www.scassn.org/K12/K12Stds.htm) offers a rationale for the standards, criteria for selecting the standards it includes, twenty-three statements describing skills or actions an effective communicator should be able to demonstrate, and a set of notes that references various relevant articles and books. The standards can also be downloaded as an Adobe Acrobat document (http://www.scassn.orgK12//K12stds.pdf).

- "Activities for Teaching to the Speaking, Listening and Media Literacy Standards" (not yet available) offers projects and lessons aimed at helping students achieve proficiency.

- "Assessing the Speaking, Listening and Media Literacy Standards" (not yet available) presents evaluation strategies.

By State

- **Alaska**—In 1994 and 1995, Alaska adopted Content Standards for Alaska Students (http://www.educ.state.ak.us/ContentStandards/home.html), containing a short list of one-sentence standards for various subjects, including English/language arts.

- **Arizona**—The Arizona Board of Education adopted state standards in the area of Language Arts (http://www.ade.state.az.us/standards/la.html) (reading and writing) during the summer of 1996. The state is now working on developing performance objectives and assessments. Drafts went out in November. These contain relevant standards and performance objectives for the levels of readiness (K), foundations (grades 1–3), essentials (grades 4–8), proficiency (grades 9–12), and distinction.

- **Arkansas**—English Language Arts (http://arkedu.k12.ar.us/user_doc/ade/frame/english.htm), with strands for writing, reading, speaking, and listening. Reading (http://arkedu.k12.ar.us/user_doc/ade/frame/read.htm), with strands for reading knowledge, reading behavior, and reading dispositions. The first and last of these show K–12 standards and learning expectations rather than a K–4, 5–8, and 9–12 breakdown.

- **California**—The California Department of Education put the draft Challenge Initiative standards (http://goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.

  - Reflecting educational and political changes taking place during the 1996–97 time period, the state created a Commission for the Establishment of Academic Content and Performance Standards (http://www.ca.gov/goldstandards/index.html) to develop the state's newest set of k–12 content and performance standards-first in the areas of reading, writing, and math and somewhat later for science and social studies. The deadline for submitting all of this to the State Board of Education is October 1, 1997. The site has links to the enabling legislation, commission timeline, and meeting information-including minutes of past meetings.

- **Colorado**—Colorado Reading and Writing Standards (gopher://gopher.ed.gov:10001/11/initiatives/stan-doc/standard/colorado/draft/readwrit)-Six draft standards, each in its own document. Each document elaborates on a standard for grades K–4, 5–8, and 9–12. The final draft of the Model Reading/Writing Standards (gopher://freenet.hsc.colorado.edu:70/11/school/cde/stds) is available elsewhere. In addition, the Department of Education has placed the state's Model Content Standards (http://www.cde.state.co.us/ftpcde.htm#standards) on line in three forms: as straight text, a pdf file, and a web page. A typical standards document from the DOE (http://www.cde.state.co.us/read.htm) contains a general introduction that offers a rationale for learning about the subject, followed by the standards themselves. Each standard has several subcategories which are, in turn, elaborated upon for grades K–4, 5–8, and 9–12.
- **Colorado**—CyberStatistics: English and Writing Lessons (http://www.smoky.org/~nces/Nancy_Long/Index.html)-Model lesson plans you can download that are tied to the Colorado Model Content Standards for Reading and Writing. They were prepared by Nancy Long, an instructor at the Smoky Hill High School in Colorado, in collaboration with the National Center for Education Statistics.
- **Delaware**—In June 1996, the Delaware Education Network (part of the Delaware Department of Public Instruction) placed the state's New Directions Content Standards (http://www.dpi.state.de.us/dpi/content.html) on line. The main page contains introductory and background material, with links to standards and framework documents in various fields, including English/language arts (http://www.dpi.state.de.us/dpi/standard/engla/eindex.html). Each page contains introductory material, core standards (with links to more expansive pages), references, and an excellent glossary that explains key terms. The standards pages themselves contain a restatement of each standard, links to performance indicators for each of four grade level groupings (K–3, 4–5, 6–8, and 9–12), and to pages with "vignettes" (examples of successful classroom application of a particular standard) for each of those same groupings. This site is well organized, clear, attractive, and easy to use-and should prove very helpful to everyone.
- **Florida**—The Sunshine State Standards (http://www.firn.edu/doe/curric/prek12/frame2.htm), approved by the State Board of Education on May 29, 1996, are available on the Florida Department of Education's web site in the areas of the arts (dance, music, theatre, visual arts), English/language arts, foreign language, health, math, physical education, science, and social studies. Standards for each area are divided into four grade level groupings (Pre-K to 2, grades 3–5, grades 6–8, and grades 9–12), with a web page devoted to each. A typical page contains major subject area topics with relevant standards and their subcategories elaborated upon underneath.
- **Georgia**—Georgia College has placed the Georgia Quality Core Curriculum

(http://doc.gac.peachnet.edu/NetFinder/NetFinder.acgi$Root%3Dgathering materials/ Quality Core Curriculum%7C%7C) on line in the areas of the arts (dance, drama, music), English, foreign language, health (including AIDS prevention), math, physical education, science, social studies (including Georgia studies and state and local government), and vocational education. These documents typically list several broad categories for each subject area and, for each grade level, various specific yet brief statements that are intended to guide instruction at the local level.

- **Illinois**—The Illinois State Board of Education has created an Illinois Learning Standards (http://www.isbe.state.il.us/ils/welcome.html) site that contains the June 1997 proposed frameworks in the areas of the arts, English language arts, foreign language, health, math, physical education, science, and social studies. Each disciplinary page has a chart comparing the June 1997 proposals with the July 1996 draft standards and a link to an Adobe Acrobat file of 1997 proposals.
- **Kansas**—The state has a Word 6 document available for its Communications Curriculum Standards (38K) (http://www.ksbe.state.ks.us/outcomes/qpa.html).
- **Kentucky** (http://www.kde.state.ky.us/caa/g2arts.html)
- **Louisiana**—The Louisiana Department of Education has released the state's Content Standards (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/constani.htm). This site lets you view them on screen or download them as WordPerfect 6.1 documents. For the screen versions, clicking on English Language Arts (http://www.doe.state.la.us/os2httpd/ PUBLIC/contents/engstani.htm) takes you to a page containing an introduction, various supporting documents, and a standards document containing various standards, each of which is followed by an extensive list of benchmarks for grades K–4, 5–8, and 9–12.
- **Maine**—The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/educaton/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/ Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions (http://www.state.me.us/education/revis.htm) document listing the changes made since 1996 in each subject area.
- **Maryland**—Learning Outcomes for Reading and Writing (http://www.msde.state.md.us/ msde/outcomes/out.html) contains a rationale, outcomes and performance indicators for various grades (generally grades 3, 5, 8, and 11), and supplementary documents.
- **Massachusetts**—English Language Arts (http://info.doe.mass.edu/doedocs/frameworks/ englishtoc.html)-The draft framework, not yet endorsed or accepted by the Massachusetts Board of Education due to a controversy over content.
- **Michigan**—The Michigan Department of Education Curriculum Development Program has the state-approved Model Content Standards for Curriculum in the area of English language arts (http://cdp.mde.state.us/ContentStandards/EnglishLanguageArts/). Each link takes you to a page listing the relevant standards, with each standard having a link to a slightly more elaborate version, broken down by general grade level. The bottom of the page also has links to a vision statement in each curricular area as well as to sample assessment questions. A gopher version, English Language Arts (gopher://

gopher.mde.state.us:70/00/serv/curric/corecur/English_Language_Arts), is also available. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.

- **Minnesota**—The Derpartment of Children, Families and Learning has created a Graduation Standards (http://www.educ.state.mn.us/grad/gradhom.htm) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP) page dealing with the Profile of Learning for various grades and subject areas. This page has links to elements of the profile for different grades and sample curricular materials available for download.
- **Missouri**—Communications Arts (http://services.dese.state.mo.us/standards/comarts.html)-A "Show-Me Standards," approved by the State Board of Education as a proposed regulation in mid-October. The page lists general goals, each of which is elaborated on slightly on its own separate page.
- **Montana**—The Arts and English Curricular Framework (gopher://gopher.ed.gov:10001/00/initiatives/stan-doc/document/state/fund/file14), a brief document, is available from the US Department of Education. In addition, a Montana Curriculum (http://161.7.114.15/opi/Curriculum.html) page from the state's education department has several curriculum guides available in Adobe Acrobat format. No previews are available.
- **Nebraska**—The Nebraska Department of Education's web site has a Policy Statement and Standards (http://nde4.nde.state.ne.us/IPS/STANDARD/PolicStand.html) page, containing a rationale for the use of standards, various definitions, and brief lists of standards and indicators in the areas of reading and writing, math, social studies, and science.
- **New Hampshire**—The New Hampshire Education Improvement and Assessment Program's K–12 English Language Arts Curriculum Framework (http://www.state.nh.us/doe/englang.htm) lists broad goals along with proficiency standards for grades 3, 6, and 10 in reading, writing, speaking, literature, and language use.
- **New Jersey**—The New Jersey Core Curriculum Content Standards (http://www/injersey.com/Education/NJDOE/) page contain an introduction followed by five to six standards in each of the different content areas (including Language and Arts Literacy) (http://www.injersey.com/Education/NJDOE/08langintro.html). Each standard has its own page containing a descriptive statement that briefly elaborates on the standard and various progress indicators for grades 4, 8, and 12. These standards were officially adopted by the state's Board of Education on May 1, 1996.
- **New Mexico**—The Center for the Education and Study of Diverse Populations (CESDP) http://tijeras.cesdp.nmhu.edu/) at New Mexico Highlands University maintains a Standards and Benchmarks (http://tijeras.cesdp.nmhu.edu/standards/standards.html) site with a Technical Assistance Guide that has links to standards approved by the State Board of Education in August 1996 in the areas of language arts, math, modern and classical languages, science, and social studies. Each page lists the relevant standards; clicking on the name of a category for a particular standard will take you to another page containing benchmarks for K–4, 5–8, and 9–12.

- **New York**
  - New York State Curriculum Framework for English and Language Arts (http://www.cnyric.org/standards/ela/ela.html)-Final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others.
  - A state Information on Curriculum Standards (http://www.nysed.gov/home/facmtg/currinfo.html) page has pdf copies of state curriculum standards and transcripts of Commissioner Mills' teleconference on standards.
  - The State Education Department has mailed out draft curriculum resource guides in several subject areas. Web copies of the guides (http://www.nysed.gov/guides/) can be downloaded as lengthy pdf files in the areas of the arts, English language arts, and mathematics, science and technology.
- **New York City**
  - NYCENet (http://205.232.151.90/), the New York City Educational NETwork has an Educational Resources (http://205.232.151.90/teach_learn/edsurse.html) page containing links to various city frameworks. The Language Arts (http://205.232.151.90/teach_learn/frameworks/langarts_frame/default.html) framework has a list of student expectations for elementary, middle, secondary, and mixed grades-each with links to a relevant Internet site.
- **North Carolina**—North Carolina Curriculum Matrix (http://www.dpi.stte.nc.us/Curriculum/CrrclmMtrx.html)
- **North Dakota**—North Dakota English Language Arts Curriculum Frameworks (gopher://gopher.ed.gov:10001/11/initiatives/stan-doc/standard/ndakota/english)-Six standards, each with its own benchmark examples. The whole set can be download in a zipped file.
- **Oklahoma**—The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS) (http://www.sde.state.ok.us/schimp/effschcurr/pass/pass.html) documents. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.
- **Oregon**
  - The Oregon State Education Department has standards documents online on its web site and, in particular, on its What's New page. Common Curriculum Goals (a 201k pdf file)(http://www.ode.state.or.us/inst/ccg.pdf) contains curriculum goals, content standards, and benchmarks for grades three, five, eight, and ten. A second and smaller file, Performance Standards (http://www.ode.state.or.us/inst/perstan.pdf), describes and gives examples of standards and assessments for English and math.
  - Oregon's Proficiency-based Admission Standards System (http://pass-

osshe.uoregon.edu/), or PASS, contains that state's approach to standards development. PASS grew out of a legislative change in high school graduation requirements from traditional methods, such as Carnegie units, to demonstrations of mastery in certain subject areas. The Oregon State System of Higher Education (OSSHE) offered to prepare standards that would guide college admission and created a group, made up of college and high school staff, that prepared PASS. While the group's work focuses on what is expected of students going to one of Oregon's colleges (and not necessarily what is expected of all high school students), the implication of this project is that all Oregon high schools should follow it. In March 1996, the project released a draft document called Admission Standards: Content & Process Areas Proficiencies & Indicators (http://pass-osshe.uoregon.edu/docs/docs.html) that listed standards (or "proficiencies," as they are called in Oregon) in six subject areas, including humanities and literature.

- **Pennsylvania**—The Pennsylvania Department of Education offers Pennsylvania's Proposed Academic Standards (http://www.cas.psu.edu/docs/pde/standards/stan.html). This page provides access to background information about state standards, a comparison of the proposed standards to the ill-fated OBE proposal of several years ago, and Adobe Acrobat versions of the proposed standards for math and for reading and writing. (Science standards should be out later this summer or early in the fall of 1997). The SED also has a Standards and Assessment (http://www.cas.psuedu/docs/pde/ESSTAND.HTML) page, with links to assessment handbooks for math, reading, and writing.
- **Rhode Island**—A Department of Education site has the English/Language Arts Framework (http://instruct.ride.ri.net/TOC.HTML), containing links to a description of how the state has begun developing its Common Core of Learning and its associated frameworks along with nine standards, each with an accompanying chart that divides the standard into "descriptors" of what students should generally be able to do at four different levels.
- **South Dakota**—The South Dakota State Board of Education has a page (http://www.state.sd.us/state/executive/deca/chapter1/chapter1.htm) with a downloadable 147k EXE file containing ten MS Word files with the state's content standards. These working drafts of the standards were submitted to the South Dakota State Board of Education in March,1996 and received a public hearing before the State Board in that June. The South Dakota Content Standards for communications, foreign language, civics, geography, history, fine arts, health, mathematics, and science were formally endorsed by the State Board on June 17, 1996. (If you have a Mac, download the EXE and run it through Stuffit Expander to get files that are readable by either Word 6 or BBEdit.)
- **Texas**
  - In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS)(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. In most cases, the TEKS are scheduled for implementation on September 1, 1998

- The Texas Center for Reading and Language Arts (http://www.tenet.edu/teks/language_arts/) seeks to serve as a source of exemplary lessons and other instructional material for teachers to use when implementing the new TEKS (Texas Essential Knowledge and Skills). It has some resources currently on line and plans to incorporate a lot more-including work that teachers can submit through this site.
- A Texas Alternative Document Draft (http://www.htcomp.net/tad/) was published in January 1997 by a group of people who believe that the Texas English language arts standards have set off in the wrong direction. They argue that standards need to state explicitly what students and teachers are expected to know or do, to focus on content and not process, and to teach reading through a heavy emphasis on phonics.

- **Utah**—Language Arts (http://www.uen.org/utah/UtahCore/LangArts.html) Core Curriculum. A set of pages, each of which provides a brief description of courses for different grades along with relevant standards and course objectives for each of those standards.
- **Vermont**—The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.html) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). In addition, the Flood Brook Union School (http://www.floodbrook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course/sbuofs.html)
- **Virginia**—The Board of Education adopted its English Standards of Learning (http://www.pen.k12.va.us/go/Sols/english.html) in June 1995.
- **Washington**—The Washington Commission on Student Learning Home Page (http:/cdl.wednet.edu/) contains links to standards documents called the Essential Academic Learning Requirements (http://csl.wednet.edu/EALR/EALR_note.html). You can download summary statements or the full documents (in Word 5 form) for: Communications (summary/full document), Reading (summary/full document), and Writing (summary/full document).
- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files. Meanwhile, Governor Tommy G. Thompson has offered his own Model Academic Standards (http://www.wisgov.state.wi.us/model.html) as an alternative to the voluntary ones coming from the Department of Public Instruction. The standards, contained in one long text document, present "performance statements" and standards for the primary, intermediate, and upper levels in the areas of English language arts, math, science, and social studies.

Foreign Language

By Organization

- **The American Council on the Teaching of Foreign Languages** (ACTFL) has a National Standards in Foreign Language Education (http://www.thomson.com/actfl/standard.html) page that presents a rationale for the 1996 "Standards for Foreign Language Learning: Preparing for the 21st Century," gives a brief list of eleven standards in five categories (communication, cultures, connections, comparisons, and communities), and provides ordering information for the complete document.
- **The Center for Applied Linguistics** (http://www.cal.org/), in cooperation with the Teachers of English to Speakers of Other Languages (http://www.ncbe.gwu.edu/tesol/), has developed a set of nine ESL standards. The March 28, 1996 draft of the ESL Standards for Pre-K–12 Students (http://www.cal.org/cal/html/eslindex.htm) is now on line. They are actively seeking feedback and have included a "Reviewer Response" form they hope readers will fill out. The standards themselves have three goals, each of which has three attached standards. Clicking on any one takes you to a page that lists the standard; provides descriptors (brief statements that elaborate on the standards); states sample progress indicators for grades pre-K to three, four to eight, and nine to twelve; and offers (or will offer soon) "vignettes"–or sample scenarios for different locales and situations that show how the standards could be used. In addition, TESOL has an ESL Standards for Pre-K–12 Students (http://www.tesol.edu/assoc/k12standards/index.html) page containing links to supplementary documents and instructional ideas
- **Mid-continent Regional Education Laboratory** (http://www.mcrel.org/)-The best place to start looking. A typically good place to start is Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education (http://www.mcrel.org/standards-benchmarks/), by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.org/connect/]). This is an excellent resource for everyone.

By State

- **Alaska**—In 1994 and 1995, Alaska adopted Content Standards for Alaska Students (http://www.educ.state.ak.us/ContentStandards/home.html), containing a short list of one-sentence standards for various subjects, including foreign language.
- **Arkansas**—Foreign Language (http://arkedu.k12.ar.us/user_doc/ade/frame/forlang.htm). Its five strands are: listening, speaking, reading, writing, and culture. Each strand has content standards and learning expectations for grades K–4, 5–8, and 9–12.
- **Arizona**—Foreign Language (http://ade.state.az.us/standards/fl.html)-A short document with a rationale and a list of standards, each of which expresses what students should know in terms of five levels: readiness (pre-K to kindergarten), foundations (grades 1 to

4), essentials (grades 5 to 8), proficiency (grades 9–12), and distinction. The documents do not contain any frameworks, or curriculum sample activities.

- **California**—The California Department of Education put the draft Challenge Initiative standards (http://goldmine.cde.ca.gov/challenge/Challenge_Standards.html)on its Goldmine site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.
- **Colorado**—In August 1996, second drafts of six standards documents went on line through links from the Model Content Standards (http://www.cde.state.co.us/ftpcde.htm#standards) page-but as pdf files only. The documents are in the fields of the arts (one file each for music and the visual arts), social studies (one file each for civics and economics), foreign language, and physical education.
- **Florida**—The Sunshine State Standards (http://www.firn.edu/doe/curric/prek12/frame2.htm)-approved by the State Board of Education on May 29, 1996, are available on the Florida Department of Education's web site in the areas of the arts (dance, music, theatre, visual arts), English/language arts, foreign language, health, math, physical education, science, and social studies. Standards for each area are divided into four grade level groupings (Pre-K to 2, grades 3–5, grades 6–8, and grades 9–12), with a web page devoted to each. A typical page contains major subject area topics with relevant standards and their subcategories elaborated upon underneath.
- **Georgia**—Georgia College has placed the Georgia Quality Core Curriculum (http:doc-gac.peachnet.edu/NetFinder/NetFinder.acgi$Root%3Dgathering materials/Quality Core Curriculum%7C%7C) on line in the areas of the arts (dance, drama, music), English, foreign language, health (including AIDS prevention), math, physical education, science, social studies (including Georgia studies and state and local government), and vocational education. These documents typically list several broad categories for each subject area and, for each grade level, various specific yet brief statements that are intended to guide instruction at the local level
- **Illinois**—The Illinois State Board of Education has created an Illinois Learning Standards (http://www.isbe.state.il.us/ils/welcome.html) site that contains the June 1997 proposed frameworks in the areas of the arts, English language arts, foreign language, health, math, physical education, science, and social studies. Each disciplinary page has a chart comparing the June 1997 proposals with the July 1996 draft standards and a link to an Adobe Acrobat file of 1997 proposals.
- **Louisiana**—The Louisiana Department of Education has released the state's Content Standards (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/constani.htm). This site lets you view them on screen or download them as WordPerfect 6.1 documents. For the screen versions, clicking on Foreign Language (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/tablcont.htm) takes you to a page containing an introduction, various supporting documents, and a standards document containing various standards, each of which is followed by an extensive list of benchmarks for grades K–4, 5–8, and 9–12.
- **Maine**—The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results

(http://www.state.me.us/education/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions document listing the changes made since 1996 in each subject area.

- **Massachusetts**—World Languages (http://info.doe.mass.edu/doedocs/frameworks/wlangtoc.html)-Preface, overview, rationale, strands and learning standards (for communication, culture, making connections, and participation), suggested readings, and selected resources. Broken down by grade groupings (pre-K to 4, 5 to 8, and high school), with a substantial amount of explanatory information and instructional examples.
- **Michigan**—World Languages (gopher://gopher.mde.state.mi.us:70/00/serv/curric/core-cur/World_Languages)-Part of the 1994 draft Core Curriculum Content Standards, the document contains an overview, the standards (with brief sample performance tasks or student expectations for early elementary, later elementary, middle school, and high school years), and cross-references to documents from other disciplines. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.
- **Minnesota**—The Department of Children, Families and Learning has created a Graduation Standards (http://www.educ.state.mn.us/grad/gradhom.htm) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP) page dealing with the Profile of Learning for various grades and subject areas. This page has links to elements of the profile for different grades and sample curricular materials available for download.
- **Montana**—A Montana Curriculum (http://161.7.114.15/opi/Curriculum.html) page from the state's education department has a second language (including ESL) curriculum guide available in Adobe Acrobat format. No preview is available.
- **New Jersey**—The New Jersey Core Curriculum Content Standards (http://www.injersey.com/Education/NJDOE/) page contain an introduction followed by five to six standards in each of the different content areas (including World Languages) (http://www.injersey.com/Education/NJDOE/12wlangintro.html). Each standard has its own page containing a descriptive statement that briefly elaborates on the standard and various progress indicators for grades 4, 8, and 12. These standards were officially adopted by the state's Board of Education on May 1, 1996.
- **New Mexico**—The Center for the Education and Study of Diverse Populations (CESDP)(http://tijeras.cesdp.nmhu.edu/) at New Mexico Highlands University maintains a Standards and Benchmarks (http://tijeras.cesdp.nmhu.edu/standards/standards.html) site with a Technical Assistance Guide that has links to standards approved by the State Board of Education in August 1996 in the areas of language arts, math, modern and classical languages, science, and social studies. Each page lists the relevant standards; clicking on the name of a category for a particular standard will take you to another page containing benchmarks for K–4, 5–8, and 9–12.
- **New York**—New York State Curriculum Framework for Languages Other Than English (http://www.cnuric.org/standards/lote/lote.html)-Final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others.

In addition, the New York State Education Department offers a page of Adobe Acrobat documents containing learning standards and samples of student work.

- **New York City**—NYCENet (http://205.232.151.90/), the New York City Educational NETwork has an Educational Resources (http://205.232.11.90/teach_learn/edsurse.html) page containing links to various city frameworks. The Languages Other Than English (http://205.232.151.90/teach_learn/frameworks/langnot_frame/default.html) framework has one social studies statement.
- **North Carolina**—North Carolina Curriculum Matrix (http://www.dpi.state.nc.us/Curriculum/CrrclmMtx.html)
- **Oklahoma**—The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS) (http://www.sde.state.ok.us/schimp/effschcurr/pass/pass.html) documents. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.
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- **South Carolina**—Foreign Languages Curriculum Framework. (http://www.state.sc.us/sde/framewks/foreign.htm) A list of standards and sample activities.
- **South Dakota**—The South Dakota State Board of Education has a page (http://www.state.sd.us/state/executive/deca/chapter1/chapter1.htm) with a downloadable 147k EXE file containing ten MS Word files with the state's content standards. These working drafts of the standards were submitted to the South Dakota State Board of Education in March,1996 and received a public hearing before the State Board in that June. The South Dakota Content Standards for communications, foreign language, civics, geography, history, fine arts, health, mathematics, and science were formally endorsed by the State Board on June 17, 1996. (If you have a Mac, download the EXE

and run it through Stuffit Expander to get files that are readable by either Word 6 or BBEdit.)

- **Texas**—In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS) (http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. In most cases, the TEKS are scheduled for implementation on September 1, 1998.
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- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files.

Health

By Organization

- **The American Cancer Society** (http://www.cancer.org/) has published the National Health Education Standards on a site it calls Health for Success (http://www.cancer.org/cshe.html). The standards were prepared by a group of health organizations from throughout the country including the American Cancer Society, the Association for the Advancement of Health Education, the American Public Health Association, the American School Health Association, and the Society of State Directors of Health, Physical Education and Recreation. The site gives access to a number of pages about the standards. The one that is most immediately useful, called CSHE: National Health Education Standards (http://www.cancer.org/cshestud.html) contains seven standards and, for each, a rationale and performance indicators for grades K–4, 5–8, and 9–11.
- **Mid-continent Regional Education Laboratory** (http://www.mcrel.org/)-The best place to start looking. A typically good place to start is Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education (http://www.mcrel.org/standards-benchmarks/) by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language,

health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.org/connect/]). This is an excellent resource for everyone.

By State

- **Alaska**—In 1994 and 1995, Alaska adopted Content Standards for Alaska Students (http://www.educ.state.ak.us/ContentStandards/home.html), containing a short list of one-sentence standards for various subjects, including health.
- **Arizona**—Health (http://www.ade.state.az.us/standards/ch.html)-A short document with a rationale and a list of standards, each of which expresses what students should know in terms of five levels: readiness (pre-K to kindergarten), foundations (grades 1 to 4), essentials (grades 5 to 8), proficiency (grades 9–12), and distinction. The documents do not contain any frameworks, or curriculum sample activities. A separate document (Addendum 1 [http://www.ade.state.az.us/standards/add.html]) shows the relationship between the Arizona health standards and the National Health Education Standards.
- **California**—The California Department of Education put the draft Challenge Initiative standards (http://goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.
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- **Kentucky** (http://www.kde.state.ky.us/caa/g2pl.html)
- **Maine**—The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/education/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/ Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions document listing the changes made since 1996 in each subject area.
- **Massachusetts**—Health (http://info.doe.mass.edu/doedocs/frameworks/healthtoc.html)-Preface, overview, rationale, strands and learning standards, and selected references. Broken down by grade groupings (pre-K to 4, 5 to 8, and high school), with a substantial amount of explanatory information and instructional examples.
- **Michigan**—Health Education (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Health_Education)-Part of the 1994 draft Core Curriculum Content Standards, the document contains an overview, the standards (with brief sample performance tasks or student expectations for early elementary, later elementary, middle school, and high school years), and cross-references to documents from other disciplines. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.
- **Minnesota**—The Department of Children, Families and Learning has created a Graduation Standards (http://www.educ.state.mn.us/grad/gradhom.htm) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP) page dealing with the Profile of Learning for various grades and subject areas. This page has links to elements of the profile for different grades and sample curricular materials available for download.
- **Missouri**—Health/Physical Education (http://services.dese.state.mo.us/standards/healthed.html)-A "Show-Me Standards," approved by the State Board of Education as a proposed regulation in mid-October. The page lists general goals, each of which is elaborated on slightly on its own separate page.
- **Montana**—A Montana Curriculum (http://161.7.114.15/opi/Curriculum.html) page from the state's education department has a health curriculum guide available in Adobe Acrobat format. No preview is available.
- **New Jersey**—The New Jersey Core Curriculum Content Standards (http://www.injersey.com/Education/NJDOE/) page contain an introduction followed by five to six standards in each of the different content areas (including Comprehensive Health and Physical Education) (http://www.injersey.com/Education/NJDOE/07hpeintro.html). Each standard has its own page containing a descriptive statement that briefly elaborates on the standard and various progress indicators for grades 4, 8, and 12. These standards were officialy adopted by the state's Board of Education on May 1, 1996.

- **New York**—New York State Curriculum Framework for Health, Physical Education, and Home Economics (http://www.cnyric.org/standards/h-e-he/h-pe-he.html)-Final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others. In addition, the New York State Education Department offers a page of Adobe Acrobat documents containing learning standards and samples of student work.
- **North Carolina**—North Carolina Curriculum Matrix (http://www.dpi.state.nc.us/Curriculum/CrrclmMtrx.html)
- **South Dakota**—The South Dakota State Board of Education has a page (http://www.state.sd.us/state/executive/decs/chapter1/chapter1.htm) with a downloadable 147k EXE file containing ten MS Word files with the state's content standards. These working drafts of the standards were submitted to the South Dakota State Board of Education in March,1996 and received a public hearing before the State Board in that June. The South Dakota Content Standards for communications, foreign language, civics, geography, history, fine arts, health, mathematics, and science were formally endorsed by the State Board on June 17, 1996. (If you have a Mac, download the EXE and run it through Stuffit Expander to get files that are readable by either Word 6 or BBEdit.)
- **Texas**—In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS)(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. In most cases, the TEKS are scheduled for implementation on September 1, 1998.
- **Utah**—Health (http://www.uen.org/utah/UtahCore/Health.html) Core Curriculum. A set of pages, each of which provides a brief description of courses for different grades along with relevant standards and course objectives for each of those standards.
- **Vermont**—The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.htm) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). In addition, the Flood Brook Union School (http://www.floodbrook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course.sbuofs.html).
- **Washington**—The Washington Commission on Student Learning Home Page (http://csl.wednet.edu/) contains links to relatively brief standards documents called the Essential Academic Learning Requirements (http://csl.wednet.edu/EALR/EALR_note.html). From there you can download summary statements or the full document (in Word 5 form) for Health and Fitness (http://csl.wednet.edu/EALR/Health.html).
- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files.

Home Economics

By State

- **California**—The California Department of Education put the draft Challenge Initiative standards (http:goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.
- **Georgia**—Vocational Arts (gopher://sneezy.gac.peachnet.edu:70/1D-2%3A43164%3AVocationalEducation)-Georgia Quality Core Curriculum documents for consumer homemaking (grades 6–8), industrial arts (grades 9–12), trade and industrial education, and vocational special needs.
- **Minnesota**—The Department of Children, Families and Learning has created a Graduation Standards (http://www.educ.state.mn.us/) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP) page dealing with the Profile of Learning for various grades and subject areas. This page has links to elements of the profile for different grades and sample curricular materials available for download.
- **New York**—New York State Curriculum Framework for Health, Physical Education, and Home Economics (http://www.cnyric.org/standards/h-pe-he/h-pe-he.html)-Final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others. In addition, the New York State Education Department offers a page of Adobe Acrobat documents containing learning standards and samples of student work.
- **Texas**—In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS)(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. In most cases, the TEKS are scheduled for implementation on September 1, 1998.
- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://wbadger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files.

Library Media

By Organization

- **The American Association of School Librarians** (http://www.ala.org/aasl/index.html) and the **Association for Educational Communications and Technology** (http://www.aect.org/) published the fifth draft of their Information Literacy Standards for Student Learning (http://www.ala.org/aasl/stndsdrft5.html) on October 7, 1996. The document contains nine standards spread across three categories (information literacy, independent learning, and social responsibility). Each standard has between two and four descriptive indicators. The standards and indicators are clearly written and should be very helpful to everyone who teaches, though they are fairly general and will require considerable work building lessons around them The National Communication Association (formerly the Speech Communication Association)The NCA (http://www.scassn.org/) has placed the first of three parts of the Standards for Speaking, Listening and Media Literacy (http://www.scassn.org/K12//K12stdspr.htm) on its web site.

- Speaking, Listening, and Media Literacy Standards for K Through 12 Education (http://www.scassn.org/K12/K12Stds.htm) offers a rationale for the standards, criteria for selecting the standards it includes, twenty-three statements describing skills or actions an effective communicator should be able to demonstrate, and a set of notes that references various relevant articles and books. The standards can also be downloaded as an Adobe Acrobat document (http://www.scassn.orgK12//K12stds.pdf).
- "Activities for Teaching to the Speaking, Listening and Media Literacy Standards" (not yet available) offers projects and lessons aimed at helping students achieve proficiency.
- "Assessing the Speaking, Listening and Media Literacy Standards" (not yet available) presents evaluation strategies.

By State

- **Colorado**—The Colorado Model Information Literacy Guidelines (http://www.cde.state.co.us/ftpcde.htm#guidelines) are available in pdf and text formats, with additional rubrics available in a separate pdf file.
- **Massachusetts**—The Professional Standards Committee of the Massachusetts School Library Media Association has prepared a Standards for School Library Media Centers in the Commonwealth of Massachusetts (http://info.doe.mass.edu/doedocs/Lmstandards/lmstandards.html), now available on the DOE page. The document contains recommendations about library media center staffing levels, collections, and budgets; various library media standards; and sample policies on such topics as student use of the Internet.
- **North Dakota**—North Dakota Curriculum Frameworks Volume I: Language Arts, Library Media, Mathematics, Science, Social studies (http://www.enc.org/reform/fworks/ENC1375/nf_1375.htm), 1993 (from the Eisenhower National Clearinghouse[http://www.enc.org/]). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.
- **Oregon**—The Oregon Educational Media Association (http://teleport.com/~oema/) has prepared Information Literacy Guidelines (http://www.teleport.com/~oema/infolit.html) for the Oregon Common Curriculum Goals in English/Language Arts as well as for

some portions of the arts, health, math, science, and social studies. The guidelines correlate these standards and goals to the draft Information Literacy Standards developed by AASL and AECT

- **Texas**—Texas has developed library standards through the Texas State Library rather than the Texas Education Agency. The School Library Standards for Texas (http://www.tsl.state.tx.us/LD/pubs/schoollibstand.htm)(adopted on May 19, 1997 by the Texas State Library and Archives Commission) contain recommendations about what a library should look like, how it should be staffed, and the kind of resources it should offer
- **Utah**—Library Media (http://www.uen.org/utah/UtahCore/Media.html) Core Curriculum. A set of pages, each of which provides a brief description of courses for different grades along with relevant standards and course objectives for each of those standards.
- **Washington**—Prepared by the Office of the Superintendent of Public Instruction and the Washington Library Media Association in 1996., the state's Essential Skills for Information Literacy (http://www.wlma.org/literacy/eslintro.htm) briefly defines six essential skills and benchmarks them at three different levels (roughly speaking, the fourth, seventh, and tenth grades.

Math

By Organization

- **2 plus 2: The Home of Mathematically Correct** (http://ourworld.compuserv.com/homepages/mathman/) offers articles and other criticisms of math standards, particularly the NCTM standards and the California frameworks. The group has recently prepared its own draft Mathematics Standards for Kindergarten to Geometry (http://ourworld.compuserv.com/homepages/mathmankprea.htm), presenting it to the San Diego City Board of Education in January 1997.
- **The American Association for the Advancement of Science's Project 2061** (http://www.aaasa.org/project2061/) has put up its Benchmarks for Science Literacy (http://www.aaasa.org/project2061/bench/default.htm). These contain benchmarks and a very intelligent and readable discussion of benchmarks as they relate to science, math, technology, and the interaction of all three areas
- The American Mathematical Association of Two-Year Colleges (AMATYC) is hosted by the **Illinois Mathematics Association of Community Colleges** (http://www.richland.cc.il.us/imacc/). The IMACC site contains the AMATYC math standards, Crossroads In Mathematics: Standards for Introductory College Mathematics Before Calculus (http://www.richland.cc.il.us/imacc/standards), which contain frameworks and explanatory material about secondary math which are similar to many from the states.
- **The Eisenhower National Clearinghouse** (http://www.enc.org/) offers a wealth of excellent material, ranging from a copy of the NCTM standards (http://www.enc.org/reform/journals/ENC2280/nf_280dtoc1.htm) to various state curriculum frameworks; from journal articles about math and science instruction to lesson ideas and Internet sites

bound to help any educator. Revamped in early 1997, the ENC site is one of the few that no one should miss.

- **Explorer** (http://unite2.tisl.ukans.edu/) offers information about math and science software programs, CDs, and printed material. From Explorer's home page, you can enter math or science directories either by category or content outline. Both options bring you to a list of relevant resources. You can then click on one to a see a brief description, its correlation with NCTM or NSTA standards, and information about how to get it. In many cases, the resource is a piece of free or low-cost software that you can download directly by clicking on an appropriate word.
- **The Mathematical Association of America** (http://www.maa.org/), though it is more focused on college teaching than on secondary schools, has published to relevant pieces: The MAA and the NCTM Standards: Some Recent History (http://www.maa.org/features/maa_and_nctm.html), by Ken Ross; and Quantitative Reasoning for College Graduates: A Complement to the Standards (http://www.maa.org/past/ql/ql_toc.html)(an exposition on what every college graduate should know).
- **Mid-continent Regional Education Laboratory** (http://www.mcrel.org/)-The best place to start looking. A typically good place to start is Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education (http://www.mcrel.org/standaards-benchmarks/), by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.org/connect/]). This is an excellent resource for everyone.
- New to McREL is the **Eisenhower High Plains Consortium for Mathematics and Science** (http://www.mcrel.org/hpc/), with the promise of many good resources to come. It currently has the Summary of Analyzed State Curriculum Frameworks (http://www.mcrel.org/products/sum-cur-fram/), an analysis of math and science frameworks from 33 states (21 for math, 19 for science) which helps to both clarify what we mean by standards and curriculum frameworks and to examine the current state of framework development in the fields of science and math. The report is excellent, though somewhat limited in that the latest state framework it incorporates was published in 1992.
- **National Council of Teachers of Mathematics** (http://www.pbs.org/learning/mathemathline/nctmhome.html)-The NCTM is way ahead of the other professional organizations in putting its standards online. Everything you would want to see for each of the grade groupings, for evaluation, or to find out what is going to happen next is linked through an NCTM Standards page http://www.enc.org/online/NCTM/280dtoc1.html) maintained by the Eisenhower National Clearinghouse for Mathematics and Science Education. The NCTM home page itself contains links to various articles and op-ed style pieces about standards that have appeared in NCTM journals. It also contains an online questionnaire (http://www.nctm.org/whats_new/standards_future.htm) soliciting comments on a proposal to revise and realign the NCTM standards over the next several years.

- **National Center on Education and the Economy** (http://www.ncee.org/)-The NCEE and the **University of Pittsburgh's Learning Research and Development Center** (http://www.lrdc.pitt.edu/) are involved in a New Standards project that is developing performance standards (including examples) for English/language arts, math, science, and applied learning based on the national standards projects in those areas. From this site you can order the Performance Standards Consultation Draft (http://www.ncee.org/files/nsOrderForm.html) for elementary, middle, and high school grades as separate documents or as a set.
- **Pathways to School Improvement** (North Central Regional Educational Laboratory [http:www.ncrel.org/sdrs/pathwayg.htm]) has an outstanding set of articles, collectively called the Critical Issues series, which clearly, concisely, and in an intelligent and very informed manner discuss and explain the new math and science standards using linked references to the standards, explanations of various concepts, and excellent examples. These are pages everyone ought to read.
  - Aligning and Articulating Standards Across the Curriculum (Math)
  - Implementing Curriculum, Instruction and Assessment Standards in Mathematics
  - The Significance of the NCTM Standards to the Pathways Critical Issues in Mathematics
- William G. Quirk Seminars-Very critical of the NCTM math standards as artifacts of progressive education that fail to emphasize explicit math concepts, Quirk has developed a web site called The Truth About Math Standards and Information-Age Math Reform (http://www.wgquirk.com/). It currently has extensive critiques of both national and New Jersey standards, called The Truth About the NCTM Standards and The Truth About the New Jersey Math Standards (http://www.wgquirk.com/Njmathst.html).

By State

- **Alabama**—The Eisenhower National Clearinghouse (http://www.enc.org/) has placed the Alabama Course of Study: Mathematics (http://www.enc.org/reform/fworks/ENC1459/nf_1459.html)(1989) on line. This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there.
- **Alaska**—In 1994 and 1995, Alaska adopted Content Standards for Alaska Students (http://www.educ.state.ak.us/ContentStandards/home.html),containing a short list of one-sentence standards for various subjects, including math.
- **Arizona**—The Arizona Board of Education adopted state standards in the area of Math (http://www.ade.state.az.us/standards/math.html) during the summer of 1996. The state is now working on developing performance objectives and assessments. Drafts went out in November. These contain relevant standards and performance objectives for the levels of readiness (K), foundations (grades 1–3), essentials (grades 4–8), proficiency (grades 9–12), and distinction.
- **Arkansas**—Mathematics (http://arked.k12.ar.us/user_doc/ade/frame/math.htm) draft framework. Its five strands are: number sense, properties and operations; geometry; measurement; data analysis, statistics and probability; and algebra and functions. Each strand has content standards and learning expectations for grades K–4, 5–8, and 9–12.

- **California**
  - The California Department of Education put the draft Challenge Initiative standards (http://goldmine..cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine (http://goldmine.cde.gov/) site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.
  - Reflecting educational and political changes taking place during the 1996–97 time period, the state created a Commission for the Establishment of Academic Content and Performance Standards (http://www.ca.gov/goldstandards/index.html) to develop the state's newest set of k–12 content and performance standards-first in the areas of reading, writing, and math and somewhat later for science and social studies. The deadline for submitting all of this to the State Board of Education is October 1, 1997. The site has links to the enabling legislation, commission timeline, and meeting information-including minutes of past meetings.
- **Colorado**—The Department of Education has placed the state's Model Content Standards (http://www.cde.state.co.us/ftpcde.htm#standards) on line in three forms: as straight text, a pdf file, and a web page. A typical standards document contains a general introduction that offers a rationale for learning about the subject, followed by the standards themselves. Each standard has several subcategories which are, in turn, elaborated upon for grades K–4, 5–8, and 9–12. Key terms are linked to definitions that appear at the end of their documents. In addition, several other Internet sites maintain their own copies of these standards. You can get the standards from the DOE (http://www.cde.state.co.us/math.htm) or from another site (http://bcn.boulder.co.us:80/connect/standards/math/math.html).
- **Delaware**—In June 1996, the Delaware Education Network (part of the Delaware Department of Public Instruction) placed the state's New Directions Content Standards (http;//www.dpi.state.de.us/dpi/content.html) on line. The main page contains introductory and background material, with links to standards and framework documents in various fields, including math (http://www.dpi.state.de.us/dpi/standard/math/mindex.html). Each page contains introductory material, core standards (with links to more expansive pages), references, and an excellent glossary that explains key terms. The standards pages themselves contain a restatement of each standard, links to performance indicators for each of four grade level groupings (K–3, 4–5, 6–8, and 9–12), and to pages with "vignettes" (examples of successful classroom application of a particular standard) for each of those same groupings. This site is well organized, clear, attractive, and easy to use-and should prove very helpful to everyone.
- **Florida**—The Sunshine State Standards (http://www.firn.edu/doe/curric/prek12/frame2.htm), approved by the State Board of Education on May 29, 1996, are available on the Florida Department of Education's web site in the areas of the arts (dance, music, theatre, visual arts), English/language arts, foreign language, health, math, physical education, science, and social studies. Standards for each area are divided into four grade level groupings (Pre-K to 2, grades 3–5, grades 6–8, and grades 9–12), with a web page devoted to each. A typical page contains major subject area topics with relevant standards and their subcategories elaborated upon underneath.

- **Georgia**—Georgia College has placed the Georgia Quality Core Curriculum (http://doc.gac.peachnet.edu/NetFinder/NetFinder.acgi$Root%3Dgathering materials/ Quality Core Curriculum%7C%7C) on line in the areas of the arts (dance, drama, music), English, foreign language, health (including AIDS prevention), math, physical education, science, social studies (including Georgia studies and state and local government), and vocational education. These documents typically list several broad categories for each subject area and, for each grade level, various specific yet brief statements that are intended to guide instruction at the local level.
- **Idaho**—Idaho K–12 Mathematics Content Guide and Framework (http://www.enc.org/ reform/fworks/ENC3208/nf_3208.htm), 1994 (from the Eisenhower National Clearinghouse) (http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.
- **Illinois**—The Illinois State Board of Education has created an Illinois Learning Standards (http://www.isbe.state.il.us/ils/welcome.html) site that contains the June 1997 proposed frameworks in the areas of the arts, English language arts, foreign language, health, math, physical education, science, and social studies. Each disciplinary page has a chart comparing the June 1997 proposals with the July 1996 draft standards and a link to an Adobe Acrobat file of 1997 proposals.
- **Indiana**—The Indiana Department of Education site now has an Electronic Library (http://ideanet.doe.state.in.us/publications/index.html), with links to the state proficiency guides in math, science (draft), and social studies. The first and last of these are available as pdf documents while the science guide can be read directly on the web site. The proficiencies are organized by topics within grade levels and contain some sample teaching strategies.
- **Iowa**—A Guide to Curriculum Development in Mathematics (http://www.enc.org/ reform/fworks/ENC3131/nf_3131.htm), 1987 (from the Eisenhower National Clearinghouse) (http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.
- **Kansas**—Kansas Mathematics Curriculum Standards: Mathematical Powers for All Kansans (http://www.enc.org/reform/fworks/ENC2854/nf_2854.htm), 1993 (from the Eisenhower National Clearinghouse)(http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there. The state also has this available as a Word 6 document (97K).
- **Kentucky** (http://www.kde.state.ky.us/caa/g2math.html)
- **Louisiana**—The Louisiana Department of Education has released the state's Content Standards (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/constani.htm). This site lets you view them on screen or download them as WordPerfect 6.1 documents. For the screen versions, clicking on Math takes you to a page containing an introduction, various supporting documents, and a standards document containing various standards, each of which is followed by an extensive list of benchmarks for grades K–4, 5–8, and 9–12.

- **Maine**
  - The Curriculum Framework for Mathematics and Science (http://www.mmsa.org/cfrntpag.html), from the Maine Mathematics and Science Alliance (http://www.mmsa.org/), is part of the state's Statewide Systemic Initiative. It contains a general set of cross-curricular standards along with valuable material regarding what constitutes good teaching strategies in math and science, brief examples, references, and ideas about assessment. The document can also be downloaded in either Macintosh or Windows versions in a file that is about one meg big.
  - The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/education/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions document listing the changes made since 1996 in each subject area.
- **Maryland**—Mathematics: A Maryland Curricular Framework (http://www.enc.org/reform/fworks/ENC0839/nf_0839.htm), 1987 (from the Eisenhower National Clearinghouse)(http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there. The Maryland DOE's Learning Outcomes for Math (http://www.state.md.us/msde/outcomes/out.html) contains a rationale, outcomes and performance indicators for various grades (generally grades 3, 5, 8, and 11), and supplementary documents.
- **Massachusetts**—Mathematics (http://info.doe.mass.edu/doedocs/frameworks/Mathtoc.html)-Preface, overview, rationale, strands and learning standards (for number sense; patterns, relations, and functions; geometry and measurement; and statistics and probability), suggested readings, and evaluation information. Broken down by grade groupings (pre-K to 4, 5 to 8, and high school), with a substantial amount of explanatory information and instructional examples.
- **Michigan**—The Michigan Department of Education Curriculum Development Program (http://cdp.mde.state.mi.us/) has the state-approved Model Content Standards for Curriculum in the area of math (http://cdp.mde.state.mi.us/ContentStandards/Mathematics/). Each link takes you to a page listing the relevant standard, with each standard having a link to a slightly more elaborate version, broken down by general grade level. The bottom of the page also has links to a vision statement in each curricular area as well as to sample assessment questions. A gopher version, Mathematics (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Mathematics), is also available. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.
- **Minnesota**—The Department of Children, Families and Learning (http://www.educ.state.mn.us/) has created a Graduation Standards (http://www.educ.state.mn.us/grad/gradhom.htm) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP)page dealing with the Profile of Learning for various grades and subject

areas. This page has links to elements of the profile for different grades and sample curricular materials available for download. SciMathMN (http://www.informns.k12.mn.us/scimathmn.html) has information and resources related to math and science, including news about its programs and a SciMathMN listserv.

- **Missouri**—Mathematics (http://services.dese.state.mo.us/standards/math.html)-A "Show-Me Standards," approved by the State Board of Education as a proposed regulation in mid-October. The page lists general goals, each of which is elaborated on slightly on its own separate page.
- **Montana**—Toolkit for Mathematics Curriculum Development (http://www.enc.org/reform/fworks/ENC1665/nf_1665.htm), draft, 1994 (from the Eisenhower National Clearinghouse)(http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.
- **Nebraska**—The Nebraska Department of Education's web site has a Policy Statement and Standards (http://nde4.nde.state.ne.us/IPS/STANDARD/PolicStand.html) page, containing a rationale for the use of standards, various definitions, and brief lists of standards and indicators in the areas of reading and writing, math, social studies, and science.
- **New Hampshire**—K–12 Math Curriculum Frameworks (http://www.stte.nh.us/doe/math.html)-Lists K–12 curriculum and proficiency standards along with examples for specific grades on the topics of problem solving and reasoning; communication and connections; numbers, numeration, operations, and number theory; geometry, measurement, and trigonometry; data analysis, statistics, and probability; functions, relations, and algebra; mathematics of change; and discrete mathematics. The math and science frameworks are mirrored at Plymouth State College, linked to a K–12 Mathematics and Science Curriculum Frameworks (http://oz.plymouth.edu/~mathdept/curriculs/frmindex.html) page (you can also download the frameworks in.rtf format from here). In addition, the page has a variety of supplemental resources for each subject area. Each of these "Addendum" contains instructional ideas, lessons, and assessment strategies tied to different parts of each framework: NH K–3 Math Curriculum Addendum (http://oz.plymouth.edu/~mathdept/curricula/k3mtable.html), NH 4–6 Math Curriculum Addendum (http://oz.plymouth.edu/~mathdept/curricula/46table.html), and NH 7–12 Math Curriculum Addendum-anticipated in September.
- **New Jersey**—The New Jersey Core Curriculum Content Standards (http://www.injersey.com/Education/NJDOE/) page contain an introduction followed by five to six standards in each of the different content areas (including Mathematics [http://www.injersey.com/Education/NJDOE/09mathintro.htrml]). Each standard has its own page containing a descriptive statement that briefly elaborates on the standard and various progress indicators for grades 4, 8, and 12. These standards were officially adopted by the state's Board of Education on May 1, 1996. In addition, The New Jersey Mathematics Coalition (http://dimacs.rutgers.edu/nj_math_coalition/) has help and information about the New Jersey Mathematics Standards and Curriculum Framework (http://dimacs.rutgers.edu/nj_math_coalition/std_men.html).
- **New Mexico**—The Center for the Education and Study of Diverse Populations (CESDP)(http://tijeras.cesdp.nmhu.edu/) at New Mexico Highlands University maintains a Standards and Benchmarks (http://tijeras.cesdp.nmhu.edu/standards/standards.html).site

with a Technical Assistance Guide that has links to standards approved by the State Board of Education in August 1996 in the areas of language arts, math, modern and classical languages, science, and social studies. Each page lists the relevant standards; clicking on the name of a category for a particular standard will take you to another page containing benchmarks for K–4, 5–8, and 9–12.

- **New York**
  - New York State Curriculum Framework for Math, Science, and Technology (http://www.cnyric.org/frameworks/mst/)-Final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others.
  - The State Education Department has mailed out draft curriculum resource guides in several subject areas. Web copies of the guides (http://www.nused.gov/guides/) can be downloaded as lengthy pdf files in the areas of the arts, English language arts, and mathematics, science and technology.
  - A state Information on Curriculum Standards (http://www.nysed.gov/home/facmtg/currinfo.html) page has pdf copies of state curriculum standards and transcripts of Commissioner Mills' teleconference on standards.
  - The Lower Hudson Regional Information Center (http://www.lhric.org/) has set up a Best Practices Database (http://www.lhric.org/best.htm) containing teacher-developed projects that are aligned with the new math, science, and technology standards.
- **New York City**—NYCENet (http://205.232.151.90/), the New York City Educational NETwork has an Educational Resources (http://205.232.151.90/teach_learn/edsurse.html) page continuing links to various city frameworks. On the Math (http://205.232.151.90/teach_learn/frameworks/math/mathr.html), clicking on a grade level takes you to the frameworks and a list of relevant Internet sites.
- **North Carolina**—North Carolina Curriculum Matrix (http://www.dpi.state.nc.us/Curriculum/CrrclmMtrx.html)
- **North Dakota**—Mathematics Framework (http://www.enc.org/reform/fworks/ENC1375/nf_137533.html), 1993 (from the Eisenhower National Clearinghouse)(http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.
- **Oklahoma**—The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS)(http://www.sde/state.ok.us/schimp/effschcurr/pass/pass.html) documents. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.
- **Oregon**—The Oregon State Education Department has standards documents online on its web site and, in particular, on its What's New (http://www.ode.state.or.us/new/

idxnew.htm) page. Common Curriculum Goals (http://www.ode.state.or.us/inst/ccg.pdf)(a 201k pdf file) contains curriculum goals, content standards, and benchmarks for grades three, five, eight, and ten. A second and smaller file, Performance Standards (http://www.ode.state.or.us/inst/perstan.pdf), describes and gives examples of standards and assessments for English and math. In addition, Oregon's Proficiency-based Admission Standards System (http://pass-osshe.uoregon.edu/), or PASS, contains that state's approach to standards development. PASS grew out of a legislative change in high school graduation requirements from traditional methods, such as Carnegie units, to demonstrations of mastery in certain subject areas. The Oregon State System of Higher Education (OSSHE) offered to prepare standards that would guide college admission and created a group, made up of college and high school staff, that prepared PASS. While the group's work focuses on what is expected of students going to one of Oregon's colleges (and not necessarily what is expected of all high school students), the implication of this project is that all Oregon high schools should follow it. In March 1996, the project released a draft document called Admission Standards: Content & Process Areas Proficiencies & Indicators (http://pass-osshe.uoregon.edu/docs/docs.html) that listed standards (or "proficiencies," as they are called in Oregon) in six subject areas, including math.

- **Pennsylvania**
  - The Pennsylvania Department of Education offers Pennsylvania's Proposed Academic Standards (http://www.cas.psu.edu/docs/pde/standards/stan.html). This page provides access to background information about state standards, a comparison of the proposed standards to the ill-fated OBE proposal of several years ago, and Adobe Acrobat versions of the proposed standards for math and for reading and writing. (Science standards should be out later this summer or early in the fall of 1997.
  - The SED also has a Standards and Assessment (http://www.cas.psu.edu/docs/pde/ESSTAND.HTML) page, with links to assessment handbooks for math, reading, and writing.
  - Mathematics Curriculum Framework: 1994 (http://www.enc.org/reform/fworks/ENC1795/nf_1795.htm)-A description of Project SEQuaL (Statistics Education through Quantitative Literacy), a program at Indiana University of Pennsylvania designed "to help both elementary and secondary teachers in Pennsylvania implement the probability and statistics goals of the K–12 NCTM Standards into their classrooms".
- **South Carolina**—Mathematics Curriculum Framework (http://www.state.sc.us/sde/framewks/math.htm). A list of standards and sample activities.
- **South Dakota**—The South Dakota State Board of Education has a page (http://www.state.sd.us/state/executive/deca/chapter1/chapter1.htm) with a downloadable 147k EXE file containing ten MS Word files with the state's content standards. These working drafts of the standards were submitted to the South Dakota State Board of Education in March,1996 and received a public hearing before the State Board in that June. The South Dakota Content Standards for communications, foreign language, civics, geography, history, fine arts, health, mathematics, and science were formally endorsed by the State Board on June 17, 1996. (If you have a Mac, download the EXE and run it through Stuffit Expander to get files that are readable by either Word 6 or BBEdit.)

- **Texas**—In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS)(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. In most cases, the TEKS are scheduled for implementation on September 1, 1998.
- **Utah**—Math (http://www.uen.org/utah/UtahCore/Math.html) Core Curriculum. A set of pages, each of which provides a brief description of courses for different grades along with relevant standards and course objectives for each of those standards.
- **Virginia**—The Board of Education adopted its Mathematics Standards of Learning (http://www.pen.k12.va.us/go/Sols/math.html) in June 1995.
- **Vermont**—The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ.stand/page3.html) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). In addition, the Flood Brook Union School (http://www.floodbrook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course/sbyofs.html).
- **Washington**—The Washington Commission on Student Learning Home Page (http://csl.wednet.edu/) contains links to standards documents called the Essential Academic Learning Requirements (http://csl.wednet.edu/EALR?EALR_note.html). For math, you can download a summary statement (http://csl.wednet.edu/EALR/Mathematics_note.html) or the full document (http://csl.wednet.edu/EALR/math_ealr.wrd5) in Word 5 form.
- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files. Meanwhile, Governor Tommy G. Thompson has offered his own Model Academic Standards (http://www.wisgov.state.wi.us/model.html) as an alternative to the voluntary ones coming from the Department of Public Instruction. The standards, contained in one long text document, present "performance statements" and standards for the primary, intermediate, and upper levels in the areas of English language arts, math, science, and social studies.

Occupational Education

By Organization

- **Mid-continent Regional Education Laboratory** (http://www.mcrel.org/). Start with Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education, (http://www.mcrel.org/standards-benchmarks/) by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.org/connect/]). This is an excellent resource for everyone. McREL also has an extensive index of occupational education sites on its School to Work (http://www.mcrel.org/connect/stw.html) page-including many involved in the Occupational Skills Standards Projects.

- **The National Business Education Association** (http://www.nbea.org/partners/nbea/nbea.html) has prepared a document with recommended National Standards for Business Education (http://www.nbea.org/partnres/nbea/standard.html). These recommendations, aimed at kindergarten through the first two years of college, deal with what schools should teach in the areas of accounting, business law, career development, communications, computation, economics and personal finance, entrepreneurship, information systems, international business, interrelationships of business functions, management, and marketing.
- **The National Center for Research in Vocational Education** (http://vocserve.berkeley.edu/) is creating a listing of Industry Based Skill Standards (http://vocserve.berkeley.edu/skillstand.html) which, upon completion, should give access to standards and other information related to more than twenty different technical occupations.
- **SKILLSNET** (http://steps.atsi.edu/index.html) is an expanding site with a number of Skills Documents (http://steps.atsi.edu/skillsnet/skills_download.html) dealing with standards. You can download these as either MS Word 6.0 documents or as ASCII files.
- **The Department of Education and the Department of Labor,** beginning in 1992, have funded twenty-two Occupational Skill Standards Projects (http://www.nssb.org/clhouse/pilot.html), each designed to identify the key skills needed for American workers to compete in the global economy. This project, the National Skills Standards Board (http://www.nssb.org/), now has its own web site, lists of standards for each skill, and a newsletter (http://www.nssb.org/clhouse/newslet/bg_1.html).
  - Advanced High Performance Manufacturing
  - Agricultural Biotechnology
  - Air Conditioning, Heating and Refrigeration
  - Automobile, Autobody, Medium/Heavy, Truck Technician
  - Bioscience
  - Chemical Process Industries
  - Computer Aided Drafting and Design (CADD)
  - Electrical Construction
  - Electronics (ED)

- Electronics (DOL)
- Grocery
- Hazardous Materials Management Technology
- Health Care
- Heavy Highway/Construction & Environmental Remediation
- Hospitality and Tourism
- Human Services
- Industrial Laundry
- Metalworking
- Photonics
- Printing
- Retail Trade
- Welding

- Relatedly, the Training Technology Resource Center (http://www.ttrc.doleta.gov/), under US Department of Labor sponsorship, has a Skill Standards & Certification (http://www.ttrc.doleta.gov/sli;;std.html) page that describes the projects and has links to both US and foreign resources. Completed US standards are linked to an industry standards summary (http://www.ttrc.doleta.gov/database/research-lib/SKILLSTD/INDUSTRYSTD-SUMMARY.html) page.

By State

- **Arizona**—Workplace Skills (http://www.ade.state.az.us/standards/wp.html)-A short document with a rationale and a list standards, each of which expresses what students should know in terms of five levels: readiness (pre-K to kindergarten), foundations (grades 1 to 4), essentials (grades 5 to 8), proficiency (grades 9–12), and distinction. The documents do not contain any frameworks, or curriculum sample activities.
- **California**—The California Department of Education put the draft Challenge Initiative standards (http://goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine site. A Contents Page (http:goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.
- **Georgia**—Georgia College has placed the Georgia Quality Core Curriculum (http://doc.gac.peachnet.edu/NetFinder/NetFinder.acgi$Root%3Dgatheringmaterials/Quality Core Curriculum%7C%7C) on line in the areas of the arts (dance, drama, music), English, foreign language, health (including AIDS prevention), math, physical education, science, social studies (including Georgia studies and state and local government), and vocational education. These documents typically list several broad categories for each subject area and, for each grade level, various specific yet brief statements that are intended to guide instruction at the local level.

- **Kentucky** (http://www.kde.state.ky.us/caa/g2voc.html)
- **Maine**—The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/education/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions document listing the changes made since 1996 in each subject area.
- **Michigan**—Career and Employability Skills (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Career_%26_Employability_Skills) and Life Management Education (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Life_Management__Education)-Parts of the 1994 draft Core Curriculum Content Standards, the document contains an overview, the standards (with brief sample performance tasks or student expectations for early elementary, later elementary, middle school, and high school years), and cross-references to documents from other disciplines. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.
- **Minnesota**—The Department of Children, Families and Learning has created a Graduation Standards (http://www.educ.state.mn.us/grad/gradhom.html) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP) page dealing with the Profile of Learning for various grades and subject areas. This page has links to elements of the profile for different grades and sample curricular materials available for download.
- **Nebraska**—A Business Education (http://nde4.nde.state.ne.us/BUSED/be.html) page contains a statement about the state's business education curriculum framework (http://nde4.nde.state.ne.us/BUSED/currfrmwk.html) and a second page with links to various lesson plans (http://nde4.nde.state.ne.us/BUSED/becurr.html).
- **New Jersey**—The Fall 1995 draft of the New Jersey Core Curriculum Content Standards for Career Education (http://prism.prs.k12.nj.us/WWW/OII?career_ccc.html) is now available from the Online Internet Institute (http://prism.prs.k12.nj.us/WWW?OII/OIIhome.html), containing a short list of standards (stated in very general terms, with no breakdown by grade level) and links to relevant net resources.
- **New York**—New York State Curriculum Framework for Career Development and Occupational Studies-The final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others-should be online soon at OCM BOCES (http://www.cnuric.org/standards/). In addition, the New York State Education Department offers a page of Adobe Acrobat documents (gopher://unix10.nysed.gov:70/11/ems/office/pubs/ciai/learn-stds) containing learning standards and samples of student work.
- **New York City**—NYCENet (http://205.232.151.90/), the New York City Educational NETwork has an Educational Resources (http://205.232.151.90/teach_learn/edrsurse.html) page containing links to various city frameworks. the Occupational Education and Technical Studies (http://205.232.151.90/teach_learn/frameworks/occtech_frame/default.html) page has a list of student expectations for elementary, middle, secondary, and mixed grades-each with links to a relevant Internet site.

- **Texas**—In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS)(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. In most cases, the TEKS are scheduled for implementation on September 1, 1998.
- **Utah**—Vocational Education (http://www.uen.utahlink/UtanCore/Vocational.html) Core Curriculum. A set of pages, dealing with a seventh-and eighth-grade course, along with relevant standards and course objectives for each of those standards.
- **Vermont**—The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.htm) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). In addition, the Flood Brook Union School (http://www.floodbrook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course.sbuofs.html).
- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files.

Physical Education

By Organization

Mid-continent Regional Education Laboratory (http://www.mcrel.org/)-The best place to start looking. A typically good place to start is Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education (http:/www.mcrel.org/standards-benchmarks/), by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.org/connect/]). This is an excellent resource for everyone.

By State

- **Alaska**—In 1994 and 1995, Alaska adopted Content Standards for Alaska Students (http://www.educ.sttae.ak.us/ContentStandards/home.html), containing a short list of one-sentence standards for various subjects, including physical education.
- **Arizona**—Physical Education (http://www.ade.state.az.us/standards/pe.html)-A short

document with a rationale and a list of standards, each of which expresses what students should know in terms of five levels: readiness (pre-K to kindergarten), foundations (grades 1 to 4), essentials (grades 5 to 8), proficiency (grades 9–12), and distinction. The documents do not contain any frameworks, or curriculum sample activities.

- **California**—The California Department of Education put the draft Challenge Initiative standards (http://goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.
- **Florida**—The Sunshine State Standards (http://www.firn.edu/doe/curric/prek12/frame2.htm), approved by the State Board of Education on May 29, 1996, are available on the Florida Department of Education's web site in the areas of the arts (dance, music, theatre, visual arts), English/language arts, foreign language, health, math, physical education, science, and social studies. Standards for each area are divided into four grade level groupings (Pre-K to 2, grades 3–5, grades 6–8, and grades 9–12), with a web page devoted to each. A typical page contains major subject area topics with relevant standards and their subcategories elaborated upon underneath.
- **Georgia**—Georgia College has placed the Georgia Quality Core Curriculum (http://doc.gac.peachnet.edu/NetFinder/NetFinder.acgi$Root%3Dgathering materials/Quality Core Curriculum%7C%7C) on line in the areas of the arts (dance, drama, music), English, foreign language, health (including AIDS prevention), math, physical education, science, social studies (including Georgia studies and state and local government), and vocational education. These documents typically list several broad categories for each subject area and, for each grade level, various specific yet brief statements that are intended to guide instruction at the local level.
- **Illinois**—The Illinois State Board of Education has created an Illinois Learning Standards (http://www.isbe.state.il.us/ils/welcome.html) site that contains the June 1997 proposed frameworks in the areas of the arts, English language arts, foreign language, health, math, physical education, science, and social studies. Each disciplinary page has a chart comparing the June 1997 proposals with the July 1996 draft standards and a link to an Adobe Acrobat file of 1997 proposals.
- **Maine**—The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/education/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions document listing the changes made since 1996 in each subject area.
- **Michigan**—Physical Education (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Physical_Education)-Part of the 1994 draft Core Curriculum Content Standards, the document contains an overview, the standards (with brief sample performance tasks or student expectations for early elementary, later elementary, middle school, and high school years), and cross-references to documents from other disciplines. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.

- **Missouri**—Health/Physical Education (http://services.dese.state.mo.us/standards/healthed.html)-A "Show-Me Standards," approved by the State Board of Education as a proposed regulation in mid-October. The page lists general goals, each of which is elaborated on slightly on its own separate page.
- **New Jersey**—The New Jersey Core Curriculum Content Standards (http://www.injersey.com/Education/NJDOE/) page contain an introduction followed by five to six standards in each of the different content areas (including Comprehensive Health and Physical Education [http://www.injersey.com/Education/NJDOE/07hpeintro.html]). Each standard has its own page containing a descriptive statement that briefly elaborates on the standard and various progress indicators for grades 4, 8, and 12. These standards were officially adopted by the state's Board of Education on May 1, 1996.
- **New York**—New York State Curriculum Framework for Health, Physical Education, and Home Economics (http://www.cnyric.org/standards/h-pe-he/h-pe-he.html)-Final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others. In addition, the New York State Education Department offers a page of Adobe Acrobat documents (gopher://unix10.nysed.gov:70/11/emsc/office/pubs/ciai/learn-stds) containing learning standards and samples of student work.
- **Oklahoma**—The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS) (http://www.sde/state.ok.us/schimp/effschcurr/pass/pass.html) documents. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.
- **Oregon**—The Oregon State Education Department has standards documents online on its web site and, in particular, on its What's New (http://www.ode.state.or.us/new/idxnew.html) page. Common Curriculum Goals (http://www.ode.state.or.us/inst/ccg.pdf)(a 201k pdf file) contains curriculum goals, content standards, and benchmarks for grades three, five, eight, and ten.
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- **Utah**—The Health (http://www.uen.org/utahlink/UtahCore/Health.html) Core Curriculum contains sections on physical education. It is a set of pages, each of which provides a brief description of courses for different grades along with relevant standards and course objectives for each of those standards.
- **Vermont's** Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.htm) is a lengthy page (about 150k in size) that details all of the state's frameworks. Under each of its categories (some of which span several subject areas), the

framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). Physical Education appears in the category of Personal Development.

- The **Washington** Commission on Student Learning Home Page (http://csl.wednet.edu/) contains links to relatively brief standards documents called the Essential Academic Learning Requirements (http://csl.wednet.edu/EALR/EALR_note.html). From there you can download summary statements or the full document (in Word 5 form) for Health and Fitness (http://csl.wednet.edu/EALR/Health.html).
- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files.

Reasoning and Thinking

By Organization

- **Mid-continent Regional Education Laboratory** (htp://www.mcrel.org/). Start with Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education (http://www.mcrel.org/standards-benchmarks/), by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.org/connect/]). This is an excellent resource for everyone.

By State

- **California**—Applied Learning (http://gpldmine.cde.ca.gpv/www/Challenge_Standards/Contents.html)-An Adobe Acrobat pdf file listing the standards by grade level along with examples of relevant lessons and student work. The topic deals with such interdisciplinary themes and skills as decision making, communications, and information technology.
- **Montana**—A Montana Curriculum (http://161.7.114.15/opi/Curriculum.html) page from the state's education department has a thinking curriculum guide available in Adobe Acrobat format. No preview is available.
- **Oklahoma**—The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS) (http://www.sde/state.ok.us/schimp/effschcurr/pass/pass.html) documents. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.
- **Oregon**—Oregon's Proficiency-based Admission Standards System (http://pass-

osshe.uoregon.edu/), or PASS, contains that state's approach to standards development. PASS grew out of a legislative change in high school graduation requirements from traditional methods, such as Carnegie units, to demonstrations of mastery in certain subject areas. The Oregon State System of Higher Education (OSSHE) offered to prepare standards that would guide college admission and created a group, made up of college and high school staff, that prepared PASS. While the group's work focuses on what is expected of students going to one of Oregon's colleges (and not necessarily what is expected of all high school students), the implication of this project is that all Oregon high schools should follow it. In March 1996, the project released a draft document called Admission Standards: Content & Process Areas Proficiencies & Indicators (http://pass-osshe.uoregon.edu/docs/docs.html)that listed standards (or "proficiencies," as they are called in Oregon) in six subject areas, along with nine skills that weave through the subject areas. One of these skills is "Critical and Analytic Thinking." The draft document is currently under review, with comments being accepted through May 15.

- **Vermont**—The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.html) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). In addition, the Flood Brook Union School (http://www.floodbrook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course/sbyofs.html).

Science By Organization

- **The American Association for the Advancement of Science** (http://www.aaas.org/aaas.html) has summary and ordering information about Project 2061 (http://www.aaas.org/project2061/2061main.html), including Science for All Americans (SFAA [http://www.aaas.org/Project2061/sfaa.htm]) and Benchmarks for Science Literacy (http://www.aaas.org/project2061/bench.htm). These contain benchmarks and a very intelligent and readable discussion of benchmarks as they relate to science, math, technology, and the interaction of all three areas.
- **The Eisenhower National Clearinghouse** (http://www.enc.org/) offers a wealth of excellent material, ranging from a copy of the NCTM standards (http://www.enc.org/reform/journals/ENC2280/nf_280dtoc.htm) to various state curriculum frameworks; from journal articles about math and science instruction to lesson ideas and Internet sites bound to help any educator. Revamped in early 1997, the ENC site is one of the few that no one should miss.
- **Explorer** (http://unite2.tisl.ukans.edu/) offers information about math and science software programs, CDs, and print material. From Explorer's home page, you can enter math or science directories either by category or content outline. Both options bring you to a list of relevant resources. You can then click on one to a see a brief description, its correlation with NCTM or NSTA standards, and information about how to get it. In many cases, the resource is a piece of free or low-cost software that you can download directly by clicking on an appropriate word.

- **Mid-continent Regional Education Laboratory** (http://www.mcrel.org/)-The best place to start looking. A typically good place to start is Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education (http://www.mcrel.org/standards-benchmarks/), by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.org/connect/]). This is an excellent resource for everyone.
- New to McREL is the **Eisenhower High Plains Consortium for Mathematics and Science** (http://www.mcrel.org/hpc/), with the promise of many good resources to come. It currently has Summary of Analyzed State Curriculum Frameworks (http://www.mcrel.org/products/sum-cur-fram/)-an analysis of math and science frameworks from 33 states (21 for math, 19 for science) which helps to both clarify what we mean by standards and curriculum frameworks and to examine the current state of framework development in the fields of science and math. The report is excellent, though somewhat limited in that the latest state framework it incorporates was published in 1992.
- **The National Academy Press** (http://www.nap.edu/), a publication arm of the National Academy of Sciences (http://www.nas.edu/) has placed the National Science Education Standards (http://www.nap.edu/nap/online/nses/html/) on line. (While you can go directly to the standards, NAP asks you to fill out a registration form on an introductory page (http://www.cde.state.co.us/stdbased.htm) before doing so.) These science standards are extensive and comprehensive. The site's table of contents can take you to a history, overview, and rationale for the standards; teaching standards, with some example activities; professional development standards; assessment standards; content standards; program standards; science education system standards; reference material; and credits, an epilogue, and an appendix. Individual pages do much more than follow a typical one or two sentence listing of standards of the kind often found elsewhere. Clear prose explains each standard, suggests teaching strategies, and offers clear and compelling reasons why science should be taught as a hands-on subject. Particularly useful are the numerous links to other pages among the standards documents, making it easy to follow a side path and them come back to the document you started on. This site should serve as a exemplar to other organizations placing their standards documents on line.
- **National Center on Education and the Economy** (http://www.ncee.org/)-The NCEE and the **University of Pittsburgh's Learning Research and Development Center** (http://www.lrdc.pitt.edu/) are involved in a New Standards project that is developing performance standards (including examples) for English/language arts, math, science, and applied learning based on the national standards projects in those areas. From this site you can order the Performance Standards Consultation Draft (http://www.ncee.org/files/nsOrderForm.html) for elementary, middle, and high school grades as separate documents or as a set.
- **National Science Teachers Association** (http://www.nsta.org/)The NSTA home page has information about various activities related to the development of science standards and frameworks. Its Scope, Sequence & Coordination Project (http://www.gsh.org/

nsta_ssandc/), hosted by Microsoft's Global Schoolhouse (http://www.gsh.org/), has an extremely comprehensive curriculum-focused site, billed as containing over 2000 pages of high school science teaching resources. The site has extensive sets of lessons and lesson materials for biology, chemistry, earth and space science, and physics-all tied to the National Science Education Standards (NSES) and the NSTA's Scope, Sequence, and Coordination subject areas. You can browse or search the site by topic, keyword, or grade level to find more detailed listings within a topic. These lead to "MicroUnits"–some completed and some still in progress-which contain both teacher and student material, downloadable as Adobe Acrobat files. (This technique, while helpful in offering teachers formatted plans and materials, suffers because you cannot preview any of the microunits online to see which you might like to have and which you do not want. As a result, you have to download files that can be fairly large just to check a unit out.) Completed units have been tested in classrooms and appear to be a gold mine for both new and experienced teachers.

- **The North American Association for Environmental Education** (http://eelink.umich.edu/naaee.html) has ordering information for The NAAEE Standards Project: Papers on the Development of Environmental Education Standards (http://eelink.umich.edu/naaee.pubs.html), by D. Simmons. According to the blurb on their site, "NAAEE is leading an extensive effort to develop EE standards in the areas of materials, student performance, and educator performance. These compiled papers provide a comprehensive look at educational standards efforts and propose logical frameworks for standards." Published in 1994, the book costs $10 for non-members and $8 for members

- Pathways to School Improvement (**North Central Regional Educational Laboratory** [http://www.ncrel.org/ncrel/sdrs/pathwayg.htm])-An outstanding set of articles, collectively called the Critical Issues series, which clearly, concisely, and in an intelligent and very informed manner discuss and explain the new math and science standards using linked references to the standards, explanations of various concepts, and excellent examples. These are pages everyone ought to read.
  - Aligning and Articulating Standards Across the Curriculum (Science) (http://www.ncrel.org/ncrel/sdrs/areas/issues/content/cntareas/science/sc4400.html)
  - Implementing Curriculum, Instruction and Assessment Standards for Science Education (http://www.ncrel.org/ncrel/sdra/areas/issues/content/cntareas/science/sc300.html)

By State

- **Alaska**—In 1994 and 1995, Alaska adopted Content Standards for Alaska Students, (http://www.educ.state.ak.us/ContentStandards/home.html) containing a short list of one-sentence standards for various subjects, including science.

- **Arizona**—Science (http://ade.state.az.us.standards/science.html)-A short document with a rationale and a list of standards, each of which expresses what students should know in terms of five levels: readiness (pre-K to kindergarten), foundations (grades 1 to 4), essentials (grades 5 to 8), proficiency (grades 9–12), and distinction. The documents do not contain any frameworks, or curriculum sample activities.

- **Arkansas**—Science (http://arkedu.k12.ar.us/user_doc/ade/frame/sci.htm) Its five strands are: scientific inquiry, connections and applications, physical systems, life science systems, and earth/space systems. Each strand has content standards and learning expectations for grades K–4, 5–8, and 9–12.

- **California**
  - The California Department of Education put the draft Challenge Initiative standards (http://goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.
  - Reflecting educational and political changes taking place during the 1996–97 time period, the state created a Commission for the Establishment of Academic Content and Performance Standards (http://www.ca.gov/goldstandards/index.html) to develop the state's newest set of k–12 content and performance standards-first in the areas of reading, writing, and math and somewhat later for science and social studies. The deadline for submitting all of this to the State Board of Education is October 1, 1997. The site has links to the enabling legislation, commission timeline, and meeting information-including minutes of past meetings.
- **Colorado**—Several sites have formatted and put up the final version of the "Model State Standards for Science Education." One is on Connect (http://bcn.boulder.co.us/connect/standards/science/science.html). For some great sample instructional activities keyed to the state standards, check out OASIS (On-line Activities for Standards in School [http://www-co-cas.colorado.edu/oasis/]). In addition, the Department of Education has placed the state's Model Content Standards (http://www.cde.state.co.us/ftpcde.htm) on line in three forms: as straight text, a pdf file, and a web page. A typical standards document from the DOE (http://www.cde.state.co.us/sci.htm) contains a general introduction that offers a rationale for learning about the subject, followed by the standards themselves. Each standard has several subcategories which are, in turn, elaborated upon for grades K–4, 5–8, and 9–12.
- **Delaware**—In June 1996, the Delaware Education Network (part of the Delaware Department of Public Instruction) placed the state's New Directions Content Standards (http://www.dpi.state.de.us/dpi/content.html) on line. The main page contains introductory and background material, with links to standards and framework documents in various fields, including science (http://www.dpi.state.de.us/dpi/standard/science/sindex.html). Each page contains introductory material, core standards (with links to more expansive pages), references, and an excellent glossary that explains key terms. The standards pages themselves contain a restatement of each standard, links to performance indicators for each of four grade level groupings (K–3, 4–5, 6–8, and 9–12), and to pages with "vignettes" (examples of successful classroom application of a particular standard) for each of those same groupings. This site is well organized, clear, attractive, and easy to use-and should prove very helpful to everyone.
- **Florida**—The Sunshine State Standards (http://www.firn.edu/doe/curric/prek12/frame2.htm), approved by the State Board of Education on May 29, 1996, are available on the Florida Department of Education's web site in the areas of the arts (dance, music, theatre, visual arts), English/language arts, foreign language, health, math, physical education, science, and social studies. Standards for each area are divided into

four grade level groupings (Pre-K to 2, grades 3–5, grades 6–8, and grades 9–12), with a web page devoted to each. A typical page contains major subject area topics with relevant standards and their subcategories elaborated upon underneath. And from the Eisenhower National Clearinghouse-Science For All Students-The Florida Pre K-12 Science Curriculum Framework (http://www.enc.org/reform/fworks/ENC1267/nf_1267.htm), 1993. (This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.)

- **Georgia**—Georgia College has placed the Georgia Quality Core Curriculum (http://doc.gac.peachnet.edu/NetFinder/NetFinder.acgi$Root%3Dgatheringmaterials/Quality Core Curriculum%7C%7C) on line in the areas of the arts (dance, drama, music), English, foreign language, health (including AIDS prevention), math, physical education, science, social studies (including Georgia studies and state and local government), and vocational education. These documents typically list several broad categories for each subject area and, for each grade level, various specific yet brief statements that are intended to guide instruction at the local level.
- **Idaho**—From the Eisenhower National Clearinghouse (http://www.enc.org/)-Idaho K to 12 Science Content Guide and Framework (http://www.enc.org/reform/fworks/ENC2972/nf_2972.htm), 1994. (This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.)
- **Illinois**—The Illinois State Board of Education has created an Illinois Learning Standards (http://www.isbe.state.il.us/ils/welcome.html) site that contains the June 1997 proposed frameworks in the areas of the arts, English language arts, foreign language, health, math, physical education, science, and social studies. Each disciplinary page has a chart comparing the June 1997 proposals with the July 1996 draft standards and a link to an Adobe Acrobat file of 1997 proposals.
- **Indiana**—The Indiana Department of Education site now has an Electronic Library (http://ideanet.doe.state.in.us/publications/index.html), with links to the state proficiency guides in math, science (draft), and social studies. The first and last of these are available as pdf documents while the science guide can be read directly on the web site. The proficiencies are organized by topics within grade levels and contain some sample teaching strategies
- **Iowa**—A Guide to Curriculum Development in Science (http://www.enc.org/reform/fworks/ENC2863/nf_2863.htm), 1990 (from the Eisenhower National Clearinghouse)(http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.
- **Kansas**—Kansas Curricular Standards For Science (http://www.enc.org/reform/fworks/ENC179/nf_1379.htm), 1993 (from the Eisenhower National Clearinghouse)(http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there. The state also has this available as a Word 6 document (110K)(http://www.ksbe.state.ks.us/outcomes/qpa.html).
- **Kentucky** (http://www.kde.state.ky.us/caa/g2science.html)

- **Louisiana**—The Louisiana Department of Education has released the state's Content Standards (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/constani.htm). This site lets you view them on screen or download them as WordPerfect 6.1 documents. For the screen versions, clicking on Science (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/stabcon.htm) takes you to a page containing an introduction, various supporting documents, and a standards document containing various standards, each of which is followed by an extensive list of benchmarks for grades K–4, 5–8, and 9–12.
- **Maine**
  - The Curriculum Framework for Mathematics and Science (http;//www.mmsa.org/cfrntpag.html), from the Maine Mathematics and Science Alliance (http://www.mmsa.org/), is part of the state's Statewide Systemic Initiative. It contains a general set of cross-curricular standards along with valuable material regarding what constitutes good teaching strategies in math and science, brief examples, references, and ideas about assessment. The document can also be downloaded (http://www.mmsa.org/cfdwnlod.html) in either Macintosh or Windows versions in a file that is about one meg big.
  - The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/education/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions document listing the changes made since 1996 in each subject area.
- **Maryland**—Learning Outcomes for Science (http://www.msde.state.md.us/msde/outcomes/out.html) contains a rationale, outcomes and performance indicators for various grades (generally grades 3, 5, 8, and 11), and supplementary documents.
- **Massachusetts**—Science and Technology (http://info.doe.mass.edu/doedocs/frameworks/sciencetoc.html)-Preface, overview, rationale, strands and learning standards (for inquiry; physical, life, and earth and space sciences; technology; and science, technology, and human affairs), and evaluation information. Broken down by grade groupings (pre-K to 4, 5 to 8, and high school), with a substantial amount of explanatory information and instructional examples.
- **Michigan**—The Michigan Department of Education Curriculum Development Program (http://cdp.mde.state.mi.sus/) has the state-approved Model Content Standards for Curriculum (http://cdp.mde.state.mi.us/ContentStandards/default.html) in the area of science (http://cdp.mde.state.mi.us/ContentStandards/Science/). Each link takes you to a page listing the relevant standards, with each standard having a link to a slightly more elaborate version, broken down by general grade level. The bottom of the page also has links to a vision statement in each curricular area as well as to sample assessment questions. A gopher version, Science (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Science), is also available. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.
- **Minnesota**—The Department of Children, Families and Learning (http://www.educ.state.mn.us/) has created a Graduation Standards

(http://www.educ.state.mn.us/grad/gradhom.htm) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP) page dealing with the Profile of Learning for various grades and subject areas. This page has links to elements of the profile for different grades and sample curricular materials available for download. SciMathMN (http://www.informns.k12.mn.us/scimathmn.html) has information and resources related to math and science, including news about its programs and a SciMathMN listserv.

- **Missouri**—Science (http://services.dese.state.mo.us/standards/science.html)-A "Show-Me Standards," approved by the State Board of Education as a proposed regulation in mid-October. The page lists general goals, each of which is elaborated on slightly on its own separate page.
- **Nebraska**—The Nebraska Department of Education's web site has a Policy Statement and Standards (http://nde4.nde.state.ne.us/IPS/STANDARD/PolicStand.html) page, containing a rationale for the use of standards, various definitions, and brief lists of standards and indicators in the areas of reading and writing, math, social studies, and science.
- **New Hampshire**—The K–12 Science Curriculum Framework (http://www.state.nh.us/doe/science.htm) lists broad goals along with proficiency standards for grades 6 and 10 in "Science as Inquiry," "Science, Technology, and Society," "Life Science," "Earth/Space Science," "Physical Science," and "Unifying Themes and Concepts." The math and science frameworks are mirrored at Plymouth State College, linked to a K–12 Mathematics and Science Curriculum Frameworks (http://oz.plymouth.edu/~mathdept/curricula/frmindex.html) page (you can also download the frameworks in.rtf format from here). In addition, the page has a variety of supplemental resources for each subject area. Each of these "Addendum" contains instructional ideas, lessons, and assessment strategies tied to different parts of each framework: NH K–6 Science Curriculum Addendum (http://oz.plymouth.edu/~mathdept/curricula/k6stable.html) and NH 7–10 Science Curriculum Addendum-anticipated in September.
- **New Jersey**—The New Jersey Core Curriculum Content Standards (http://www.injersey.com/Education/NJDOE/) page contain an introduction followed by five to six standards in each of the different content areas (including Science [http://www.injersey.com/Education/NJDOE/10sciintro.html]). Each standard has its own page containing a descriptive statement that briefly elaborates on the standard and various progress indicators for grades 4, 8, and 12. These standards were officially adopted by the state's Board of Education on May 1, 1996.
- **New Mexico**—The Center for the Education and Study of Diverse Populations (CESDP)(http://tijeras.cesdp.nmhu.edu/) at New Mexico Highlands University maintains a Standards and Benchmarks (http://tijeras.cesdp.nmhu.edu/standards/standards.html) site with a Technical Assistance Guide that has links to standards approved by the State Board of Education in August 1996 in the areas of language arts, math, modern and classical languages, science, and social studies. Each page lists the relevant standards; clicking on the name of a category for a particular standard will take you to another page containing benchmarks for K–4, 5–8, and 9–12.

- **New York**
  - New York State Curriculum Framework for Math, Science, and Technology (http://www.cnyric.org/frameworks/mst/)-Final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others.
  - The State Education Department has mailed out draft curriculum resource guides in several subject areas. Web copies of the guides (http://www.nused.gov/guides/) can be downloaded as lengthy pdf files in the areas of the arts, English language arts, and mathematics, science and technology.
  - A state Information on Curriculum Standards (http://www.nysed.gov/home/facmtg/currinfo.html) page has pdf copies of state curriculum standards and transcripts of Commissioner Mills' teleconference on standards.
  - The Lower Hudson Regional Information Center (http://www.lhric.org/) has set up a Best Practices Database (http://www.lhric.org/best.htm) containing teacher-developed projects that are aligned with the new math, science, and technology standards.
- **New York City**—NYCENet (http://205.232.151.90/), the New York City Educational NETwork has an Educational Resources (http://205.232.151.90/teach_learn/edsurse.html) page containing links to various city frameworks. On the Science (http://205.232.151.90/teach_learn/frameworks/science/science.html), clicking on a grade level takes you to the frameworks and a list of relevant Internet sites.
- **North Carolina**—North Carolina Curriculum Matrix (http://www.dpi.state.nc.us/Curriculum/CrrclmMtrx.html)
- **North Dakota**—North Dakota Curriculum Frameworks Volume I: Language Arts, Library Media, Mathematics, Science, Social studies (http:.www.enc.org/reform/fworks/ENC1375/nf_1375.htm), 1993 (from the Eisenhower National Clearinghouse)(http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.
- **Oklahoma**—The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS) (http://www.sde/state.ok.us/schimp/effschcurr/pass/pass.html) documents. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.
- **Oregon**—The Oregon State Education Department has standards documents online on its web site and, in particular, on its What's New (http://www.ode.state.or.us/new/idxnew.htm) page. Common Curriculum Goals (http://www.ode.state.or.us/inst/ccg.pdf)(a 201k pdf file) contains curriculum goals, content standards, and benchmarks for grades three, five, eight, and ten. In addition, Oregon's Proficiency-based Admission Standards System (http://pass-osshe.uoregon.edu/), or PASS, contains that

state's approach to standards development. PASS grew out of a legislative change in high school graduation requirements from traditional methods, such as Carnegie units, to demonstrations of mastery in certain subject areas. The Oregon State System of Higher Education (OSSHE) offered to prepare standards that would guide college admission and created a group, made up of college and high school staff, that prepared PASS. While the group's work focuses on what is expected of students going to one of Oregon's colleges (and not necessarily what is expected of all high school students), the implication of this project is that all Oregon high schools should follow it. In March 1996, the project released a draft document called Admission Standards: Content & Process Areas Proficiencies & Indicators (http://pass-osshe.uoregon.edu/docs/docs.html) that listed standards (or "proficiencies," as they are called in Oregon) in six subject areas, including science.

- **Rhode Island**—Science Frameworks (http://instruct.ride.ri.net/doehome/toc.html) contains an overview of the Rhode Island Common Core of Learning, several pages of supporting material, and four core pages dealing with science topics (technology, physical science, the living environment, and the human organism). These list relevant standards, associated benchmarks (for grades K–2, 3–5, 6–8, and 9–12), and suggested instructional activities.
- **South Dakota**—The South Dakota State Board of Education has a page (http://www.state.sd.us/state/executive/deca/chapter1/chapter1.htm) with a downloadable 147k EXE file containing ten MS Word files with the state's content standards. These working drafts of the standards were submitted to the South Dakota State Board of Education in March,1996 and received a public hearing before the State Board that June. The South Dakota Content Standards for communications, foreign language, civics, geography, history, fine arts, health, mathematics, and science were formally endorsed by the State Board on June 17, 1996. (If you have a Mac, download the EXE and run it through Stuffit Expander to get files that are readable by either Word 6 or BBEdit.)
- **Texas**—In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS)(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. In most cases, the TEKS are scheduled for implementation on September 1, 1998
- **Utah**—Science (http://www.uen.org/utah/UtahCore/Science.html) Core Curriculum. A set of pages, each of which provides a brief description of courses for different grades along with relevant standards and course objectives for each of those standards.
- **Vermont**—The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.html) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). In addition, the Flood Brook Union School (http://www.flood-

brook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course/sby-ofs.html).

- **Virginia**—The Board of Education adopted its Science Standards of Learning (http://www.pen.k12.va.us/go/Sols/science.html) in June 1995.
- **Washington**—The Washington Commission on Student Learning Home Page (http://csl.wednet.edu/) contains links to relatively brief standards documents called the Essential Academic Learning Requirements (http://csl.wednet.edu/EALR/EALR_note.html). From there you can download summary statements or the full document (in Word 5 form) for Science (http://csl.wednet.edu/EALR/Science.html).
- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files. Meanwhile, Governor Tommy G. Thompson has offered his own Model Academic Standards (http://www.wisgov.state.wi.us/model.html) as an alternative to the voluntary ones coming from the Department of Public Instruction. The standards, contained in one long text document, present "performance statements" and standards for the primary, intermediate, and upper levels in the areas of English language arts, math, science, and social studies.

Social Studies

By Organization

- **The American Historical Association** (http://web.gmu.edu/chnm/aha/) has a link to the UCLA standards documents in its K–12 Area (http://web.gmu.edu/chnm/aha/k12.html), but nothing else as of late 1995.
- **The Center for Civic Education** (http://www.informall.org:80/Showcase/civnet/partners/Center/center.html) offers a considerable amount of good material about government, civics and the responsibilities of good citizens, and the role of civic education in modern society. This material includes standards documents and curricular frameworks, lesson plans, syllabi, and newsletters.
- **Civitas**—A Summary of Civitas: A Framework for Civic Education. (http://www.informall.org/Showcase/civnet/partners/Center/civitaexec.html)
- **The Council for Basic Education** (http://www.c-b-e.org/) has set one of its goals as being reviewing various standards projects while a related goal is to help develop standards at a local level. Currently on the site is a summary of its report on the history standards called Review Panels Find History Standards Worth Revising (http://www.c-b-e.org/history2.html).
- **The Foundation for Teaching Economics** (http://www.fte.org/fte.index.html) has issued the National Voluntary Content Standards for Pre-Collegte Economics Education (http://www.fte.org/standards.html), with twenty standards and benchmarks for grades 4, 8, and 12.
- **Mid-continent Regional Education Laboratory** (http://www.mcrel.org/)-The best

place to start looking. A typically good place to start is Content Knowledge: A Compendium of Standards and Benchmarks for K–12 Education (http://www.mcrel.org/standards-benchmarks/), by John S. Kendall and Robert J. Marzano, updated version (1995). This is a major effort to collate standards projects in the areas of the arts, foreign language, health, language arts, mathematics, occupational education, physical education, science, social studies, and thinking and reasoning. (In the case of social studies, look for separate entries for history, geography, civics, economics, and behavioral studies on the reference page.) Each subject is linked to a list of standards and from there to benchmarks that are broken out down levels by school level. Also included are source document citations and links to relevant Internet resources (through the McREL Internet Connections [http://www.mcrel.org/connect/]). This is an excellent resource for everyone.

- **NAEP-Issues Concerning A National Assessment of Civics-Executive Summary for National Assessment of Education Progress.** (http://informall.org/Showcase/civnet/partners/Center/execsum.html)
- **The National Center for History in the Schools** (http://www.sscnet.ucla.edu/nchs/)(the source for the major US and European History standards projects), has the original National Standards for United States History for Grades K–4 (http://www.sscnet.ucla.edu/nchs/usk-4toc.htm) and the National Standards for United States History for Grades 5–12 (http://www.sscnet.ucla.edu/nchs/us-toc.htm), along with an April 3, 1996 press release (http://www.sscnet.ucla.edu/nchs/press.html) about the revised standards.
- **The National Council on Economic Education** has published the Voluntary National Content Standards for Economic Education (http://www.economicsamerica.org/nctext.html), with funding from the Foundation for Teaching Economics. It contains 20 content standards, each benchmarked for grades 4, 8, and 12.
- **The National Council for History Education** (http://www.history.org/nche/) has issued a call for changes in history teaching called Reinvigorating History in U.S. Schools (http://www.history.org/nche/recommend.html). While the document is brief and speaks broadly to instructional issues, parts of it have implications for social studies standards and frameworks.
- **The National Council for the Social Studies** (http://www.ncss.org/online/) has a page showing the title page of its own Expect Excellence: Curriculum Standards for Social Studies (http://www.ncss.org/online/standards/stitle.html), along with ordering information. The organization is also in the process of putting its curriculum standards (http://www.ncss.org/oline/standards/toc.html) on line, with the executive summary and sections 1 and 2 currently being available. A note on this page says that the other sections will be on line soon.
- **National Geography Standards** (http://www.iac.net/~pfilio/geo.txt)-A list of 18 geography standards developed by the **National Center for History in the Schools,** available from Paul Filiò's social studies page.
- **National Standards for History Grades K–4** (http://www.iac.net/~pfilio/stand.txt)(excerpts)-The preface to the much larger document prepared by the **National Center for History in the Schools at UCLA**. It presents the case for study-

ing history at the early elementary level.

- National Standards for United States History for Grades K–4 (http://www.sscnet.ucla.edu/nchs/usk4-toc.htm) and **National Standards for United States History for Grades 5–12** (http://www.sscnet.ucla.edu/nchs/us-toc,htm)-HTML versions of the standards developed by the **National Center for History in the Schools,** on the NCHS home site at UCLA.
- **National Standards for World History** (National Center for History in the Schools)
- A brief content outline (http://iac.net/~pfilio/worhst.txt)(excerpted from chapter 3) for the much larger document prepared by the **National Center for History in the Schools** at UCLA.
- The preface and chapter 1 (http://www.iac.net/~pfilio/part1.html), in HTML format (prepared by Paul Filio of the **Cincinnati Public School** for the schools and the Southwest Ohio Council for the Social Studies-social studies teachers should check out his excellent page and links to a wide variety of good resources).
- Chapter 2 (http://www.iac.net/~pfilio/chap2.html), in HTML format (also prepared by Paul Filio).
- Debate over National Standards for World History (http://library.ccsu.cstateu.edu/~history/world_history/archives/stndrds.html) A page by Haines Brown, of Central Connecticut State University, that links together much of the discussion that surrounded the development of the National Standards. Here you can find press accounts, discussions and debate over the inclusion or exclusion of specific content, and some sense of the ideological bent much of the debate took.
- Statement (http://www.ed.gov/PressReleases/11-1994/history.html) by Under Secretary of Education Marshall S. Smith Regarding Release of World History and K–4 History Standards, November 11, 1994.
- The Organization of American History (http://www.insiana.edu/~oah/)
- Issued a press release (http://www.indiana.edu/~oah/revstands.html) supporting the revised history standards.
- **Publishes a weekly National Coordinating Committee** for the Promotion of History NCC Washington Update (http://www.indiana.edu/~oah/advocacy.html). Some issues have news about the history standards.

By State

- **Alaska**—In 1994 and 1995, Alaska adopted Content Standards for Alaska Students, (http://www.educ.state.ak.us/ContentStandards/home.html) containing a short list of one-sentence standards for various subjects, including social studies.
- **Arkansas**—Social Studies (http://arkedu.k12.ar.us/user_doc/ade/frame/socials.htm) Its six strands are: interdependence, continuity and change, cultural perspectives, scarcity and choice, cooperation and conflict, and citizenship. Each strand has content standards and learning expectations for grades K–4, 5–8, and 9–12.
- **California**

- The California Department of Education put the draft Challenge Initiative standards (http://goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.

- Reflecting educational and political changes taking place during the 1996–97 time period, the state created a Commission for the Establishment of Academic Content and Performance Standards (http://www.ca.gov/goldstandards/index.html) to develop the state's newest set of k–12 content and performance standards-first in the areas of reading, writing, and math and somewhat later for science and social studies. The deadline for submitting all of this to the State Board of Education is October 1, 1997. The site has links to the enabling legislation, commission timeline, and meeting information-including minutes of past meetings.

- **Colorado**—The Department of Education has placed the state's Model Content Standards (http://www.cde.state.co.us/ftpcde.htm#standards) on line in three forms: as straight text, a pdf file, and a web page. A typical standards document contains a general introduction that offers a rationale for learning about the subject, followed by the standards themselves. Each standard has several subcategories which are, in turn, elaborated upon for grades K–4, 5–8, and 9–12. Key terms are linked to definitions that appear at the end of their documents. In addition, several other Internet sites maintain their own copies of these standards.
    - Geography Standards-from the Colorado DOE (http://www.cde.state.co.us/geog.htm), from a gopher site (gopher://freenet.hsc.colorado.edu:70/11/school/cde/stds).
    - History Standards-from the Colorado DOE (http://www.cde.state.co.us/hist.htm), from a gopher site (gopher://freenet.hsc.colorado.edu:70/11/school./cde/stds), from elsewhere (http://bcn.boulder.co.us:80/connect/STDS_HISTORY.html).
    - In August 1996, second drafts of six standards documents went on line through links from the Model Content Standards page-but as pdf files only. The documents are in the fields of the arts (one file each for music and the visual arts), social studies (one file each for civics and economics), foreign language, and physical education.
    - Critical Thinking Discussion (http://www.smoky.org/~nces/Jane_Jackson/CriticalDiscussion/CritThink.html)-Model lesson plans you can download that are tied to Colorado state history standards. They were prepared by Jane Jackson, an instructor at the Smoky Hill High School (http://trex.smoky.ccsd.k12.co.us/) in Colorado, in collaboration with the National Center for Education Statistics.

- **Delaware**—In June 1996, the Delaware Education Network (part of the Delaware Department of Public Instruction) placed the state's New Directions Content Standards (http://www.dpi.state.de.us/dpi/content.html) on line. The main page contains introductory and background material, with links to standards and framework documents in various fields, including social studies (http://www.dpi.state.de.us/dpi/standard/socst/ssindex.html). Each page contains introductory material, core standards (with links to more expansive pages), references, and an excellent glossary that explains key terms. The standards pages themselves contain a restatement of each standard, links to performance indicators for each of four grade level groupings (K–3, 4–5, 6–8, and 9–12), and to pages with "vignettes" (examples of successful classroom application of a particular standard) for each of those same groupings. This site is well organized, clear, attractive, and easy to use-and should prove very helpful to everyone.

- **Florida**—The Sunshine State Standards (http://www.firn.edu/doe/curric/prek12/frame2.htm), approved by the State Board of Education on May 29, 1996, are available on the Florida Department of Education's web site in the areas of the arts (dance, music, theatre, visual arts), English/language arts, foreign language, health, math, physical education, science, and social studies. Standards for each area are divided into four grade level groupings (Pre-K to 2, grades 3–5, grades 6–8, and grades 9–12), with a web page devoted to each. A typical page contains major subject area topics with relevant standards and their subcategories elaborated upon underneath.
- **Georgia**—Georgia College has placed the Georgia Quality Core Curriculum (http://doc.gac.peachnet.edu/NetFinder/NetFinder.acgi$Root%3Dgatheringmaterials/Quality Core Curriculum%7C%7C) on line in the areas of the arts (dance, drama, music), English, foreign language, health (including AIDS prevention), math, physical education, science, social studies (including Georgia studies and state and local government), and vocational education. These documents typically list several broad categories for each subject area and, for each grade level, various specific yet brief statements that are intended to guide instruction at the local level.
- **Illinois**—The Illinois State Board of Education has created an Illinois Learning Standards (http://www.isbe.state.il.us/ils/welcome.html) site that contains the June 1997 proposed frameworks in the areas of the arts, English language arts, foreign language, health, math, physical education, science, and social studies. Each disciplinary page has a chart comparing the June 1997 proposals with the July 1996 draft standards and a link to an Adobe Acrobat file of 1997 proposals.
- **Indiana**—The Indiana Department of Education site now has an Electronic Library (http://ideanet.doe.state.in.us/publications/index.html), with links to the state proficiency guides in math, science (draft), and social studies. The first and last of these are available as pdf documents while the science guide can be read directly on the web site. The proficiencies are organized by topics within grade levels and contain some sample teaching strategies
- **Kansas**—The state has a Word 6 document available for its Social Studies Curriculum Standards (http://www.ksbe.state.ks.us/outcomes/qpa.html)(297K).
- **Kentucky** (http://www.kde.state.ky.us/caa/g2ss.html)
- **Louisiana**—The Louisiana Department of Education has released the state's Content Standards (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/constani.htm). This site lets you view them on screen or download them as WordPerfect 6.1 documents. For the screen versions, clicking on Social Studies (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/socstudi.htm) takes you to a page containing an introduction, various supporting documents, and a standards document containing various standards, each of which is followed by an extensive list of benchmarks for grades K–4, 5–8, and 9–12.

- **Maine**—The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/education/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions document listing the changes made since 1996 in each subject area.
- **Maryland**—Social Studies (gopher://sailor.lib.md.us:70/11/Findinfo/.aca/.edu/.outcomes/.soc_stud)-A rationale, outcomes, performance indicators for various topics within the social studies, and a list of source documents.
- **Massachusetts**—The social studies framework has proven to be controversial, with one version having been withdrawn and another draft substituted. On June 2, 1997, the Commissioner of Education sent out copies of the June draft of the History and Social Science Curriculum Framework (A:\frameworks/his697toc.html) and asked for reactions by June 9 for a June 16 hearing. An April draft (http://info.doe.mass.edu/doedocs/frameworks/history1.html) is also on the state's web site.
- **Michigan**—The Michigan Department of Education Curriculum Development Program (http://cdp.mde.state.mi.us/) has the state-approved Model Content Standards for Curriculum (http://cdp.mde.state.mi.us/ContentStandards/default.html) in the area of social studies (http://cdp.mde.state.mi.us/ContentStandards/SocialStudies). Each link takes you to a page listing the relevant standards, with each standard having a link to a slightly more elaborate version, broken down by general grade level. The bottom of the page also has links to a vision statement in each curricular area as well as to sample assessment questions. A gopher version, Social Studies (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Socia_Studies) is also available. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.
- **Minnesota**—The Department of Children, Families and Learning (http://www.educ.state.mn.us/) has created a Graduation Standards (http://www.educ.state.mn.us/grad/gradhom.htm) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP) page dealing with the Profile of Learning for various grades and subject areas. This page has links to elements of the profile for different grades and sample curricular materials available for download.
- **Missouri**—Social Studies (http//services.dese.state.mo.us/standards/ss.html)-A "Show-Me Standards," approved by the State Board of Education as a proposed regulation in mid-October. The page lists general goals, each of which is elaborated on slightly on its own separate page.
- **Nebraska**—The Nebraska Department of Education's web site has a Policy Statement and Standards (http://nde4.nde.state.ne.us/IPS/STANDARD/PolicStand.html) page, containing a rationale for the use of standards, various definitions, and brief lists of standards and indicators in the areas of reading and writing, math, social studies, and science. Good instructional ideas, linked to the standards, can be found at the Nebraska Social Studies Framework Project (http://nde4.nde.state.ne.us/SS/ss.html).

- **New Hampshire**—The New Hampshire Education Improvement and Assessment Program's K–12 Social Studies Curriculum Framework (http://www.stae.nh.us/doe/socst.html) lists broad goals along with proficiency standards for grades 3, 6, and 10 in civics, economics, geography, and history.
- **New Jersey**—The New Jersey Core Curriculum Content Standards (http://www.injersey.com/Education/NJDOE/) page contain an introduction followed by five to six standards in each of the different content areas (including Social Studies [http://www.injersey.com/Education/NJDOE/11socintro.html]). Each standard has its own page containing a descriptive statement that briefly elaborates on the standard and various progress indicators for grades 4, 8, and 12. These standards were officially adopted by the state's Board of Education on May 1, 1996.
- **New Mexico**—The Center for the Education and Study of Diverse Populations (CESDP)(http://tijeras.cesdp.nmhu.edu/) at New Mexico Highlands University maintains a Standards and Benchmarks (http://tijeras.cesdp.nmhu.edu/standards/standards.html) site with a Technical Assistance Guide that has links to standards approved by the State Board of Education in August 1996 in the areas of language arts, math, modern and classical languages, science, and social studies. Each page lists the relevant standards; clicking on the name of a category for a particular standard will take you to another page containing benchmarks for K–4, 5–8, and 9–12.
- **New York**—New York State Curriculum Framework for Social Studies (http://www.cnyric.org/frameworks/SocStud/)-Document and outline, with links to relevant web sites and exemplary school and community projects. In addition, the New York State Education Department offers a page of Adobe Acrobat documents (gopher://unix10.nysed.gov:70/11/emsc/office/pubs/ciai/learn-stds) containing learning standards and samples of student work.
- **New York City**—NYCENet (http://205.232.151.90/), the New York City Educational NETwork has an Educational Resources (http://205.232.151.90/teach_learn/edsurse.html) page containing links to various city frameworks. The Social Studies (http://205.232.151.90/teach_learn/frameworks/ss/ss.html) has a list of student expectations for elementary, middle, secondary, and mixed grades-each with links to a relevant Internet site.
- **North Carolina**—North Carolina Curriculum Matrix. (http://www.dpi.state.nc.us/Curriculum/CrrclmMtrx.html)
- **North Dakota**—North Dakota Curriculum Frameworks Volume I: Language Arts, Library Media, Mathematics, Science, Social studies (http:.www.enc.org/reform/fworks/ENC1375/nf_1375.htm), 1993 (from the Eisenhower National Clearinghouse)(http://www.enc.org/). This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of this page and click on the table of contents button located there.
- **Ohio**—Ohio Model Competency-Based Social Studies Program. (http://www.iac.net/~pfilio/model.txt) A large ASCII document, dated 1993 but listed as being recently adopted.
- **Oklahoma**—The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS) (http://www.sde/state.ok.us/schimp/effschcurr/pass/pass.html) docu-

ments. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.

- **Oregon**—Oregon's Proficiency-based Admission Standards System, (http://pass-osshe.uoregon.edu/) or PASS, contains that state's approach to standards development. PASS grew out of a legislative change in high school graduation requirements from traditional methods, such as Carnegie units, to demonstrations of mastery in certain subject areas. The Oregon State System of Higher Education (OSSHE) offered to prepare standards that would guide college admission and created a group, made up of college and high school staff, that prepared PASS. While the group's work focuses on what is expected of students going to one of Oregon's colleges (and not necessarily what is expected of all high school students), the implication of this project is that all Oregon high schools should follow it. In March 1996, the project released a draft document called Admission Standards: Content & Process Areas Proficiencies & Indicators (http://pass-osshe.uoregon.edu/docs/docs.html) that listed standards (or "proficiencies," as they are called in Oregon) in six subject areas, including social science. The draft document is currently under review, with comments being accepted through May 15.
- **South Dakota**—The South Dakota State Board of Education has a page (http://www.state.sd.us/state/executive/deca/chapter1/chapter1.htm) with a downloadable 147k EXE file containing ten MS Word files with the state's content standards. These working drafts of the standards were submitted to the South Dakota State Board of Education in March,1996 and received a public hearing before the State Board that June. The South Dakota Content Standards for communications, foreign language, civics, geography, history, fine arts, health, mathematics, and science were formally endorsed by the State Board on June 17, 1996. (If you have a Mac, download the EXE and run it through Stuffit Expander to get files that are readable by either Word 6 or BBEdit.)
- **Texas**
  - The Social Studies Center for Educator Development (SSCED)(http://www.tenet.edu/teks/social_studies/main.html) has a well-designed and cross-referenced version of the social studies TEKS, along with links to various resources (including an excellent one with lessons illustrating ways to use technology (http://www.tenet.edu/teks/social_studies/ssced/techno.html) to teach social studies).
  - In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS))(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. In most cases, the TEKS are scheduled for implementation on September 1, 1998.

- **Utah**—Social Studies (http://www.uen.org/utah/UtahCore/SocialStudy.html) Core Curriculum. A set of pages, each of which provides a brief description of courses for different grades along with relevant standards and course objectives for each of those standards.
- **Vermont**—The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.html) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). In addition, the Flood Brook Union School (http://www.floodbrook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course/sbyofs.html).
- **Virginia**—The Board of Education adopted its History and Social Science Standards of Learning (http://www.pen.k12.va.us/go/Sols/history.html) in June 1995.
- **Washington**—The Washington Commission on Student Learning Home Page (http://csl.wednet.edu/) contains links to relatively brief standards documents called the Essential Academic Learning Requirements (http://csl.wednet.edu/EALR/EALR_note.html). From there you can download summary statements or the full document (in Word 5 form) for Social Studies (http://csl.wednet.edu/EALD/Social_studies.html).
- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files. Meanwhile, Governor Tommy G. Thompson has offered his own Model Academic Standards (http://www.wisgov.state.wi.us/model.html) as an alternative to the voluntary ones coming from the Department of Public Instruction. The standards, contained in one long text document, present "performance statements" and standards for the primary, intermediate, and upper levels in the areas of English language arts, math, science, and social studies.

Technology

By Organization

- The **American Association for the Advancement of Science** (http://www.aaas.org/aaas.html) has summary and ordering information about Project 2061 (http://www.aaas.org/project2061/2061main.html). These contain benchmarks and a very intelligent and readable discussion of benchmarks as they relate to science, math, technology, and the interaction of all three areas.
- **International Technology Education Association** (ITEA)-Technology for All Americans: A Project to Develop National Standards for K-12 Technology Education (http://scholar.lib.vt.edu/TAA/TAA.html) is funded by the National Science Foundation

and NASA and coordinated by the ITEA. A two-phase project, Phase I is trying to define the meaning of "technology" and, therefore, the scope of any subsequent standards. (Is it a discipline of its own or a supplement to other instructions; what content does it cover?; and so on.) During Phase II, ITEA will develop model K–12 technology standards along with benchmarks at grades 2, 5, 8, and 12). Future Plans are also described. Finally, this site provides a summary of the project called Technology for All Americans: A Rationale and Structure for the Study of Technology.

- **The Journal of Technology Education** (http://borg.lib.vt.edu/ejournals/JTE/jte.html), sponsored by the ITEA, has several articles about technology standards, including:
  - Scenarios for the "Technology Standard," Spring 1996 issue-This "From the Editor" piece celebrates the inclusion of a technology standard in the National Science Education Standards, notes that science teachers are probably not prepared to implement it, and argues that this may increase opportunities for technology teachers to work with science teachers and even turn technology education into a required course at every grade level.
  - A United Vision: Technology for All Americans, by Richard E. Satchwell and William E. Dugger, Jr. describes the development of the Technology for All Americans standards project.

By State

- **Alaska**—In 1994 and 1995, **Alaska** adopted Content Standards for Alaska Students (http://www.educ.state.ak.us/ContentStandards/home.html), containing a short list of one-sentence standards for various subjects, including technology. In addition, the Alaska 2000 Technology Standards (http://invaldi.jun.alaska.edu/edtech/statewide.html) site has the March 1995 draft of state's five performance standards for technology and several brief performance indicators for each. It also has the state's Goals 2000 Technology Plan.
- **Arizona**—Technology (http://ade.state.ar.us/standards/finaltec.html)-A short document with a rationale and a list of standards, each of which expresses what students should know in terms of five levels: readiness (pre-K to kindergarten), foundations (grades 1 to 4), essentials (grades 5 to 8), proficiency (grades 9–12), and distinction. The documents do not contain any frameworks, or curriculum sample activities.
- **California**—The California Department of Education put the draft Challenge Initiative standards (http:goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine site. A Contents Page provides access to Adobe Acrobat files for the arts, English/language arts, foreign language, health, home economics, math, occupational/business education, physical education, science, social studies, and technology.
- **Illinois**—The Illinois State Board of Education has created an Illinois Learning Standards (http://www.isbe.state.il.us/ils/welcome.html) site that contains the June 1997 proposed frameworks in the areas of the arts, English language arts, foreign language, health, math, physical education, science, and social studies. Each disciplinary page has a chart comparing the June 1997 proposals with the July 1996 draft standards and a link to an Adobe Acrobat file of 1997 proposals.
- **Maine**—The Maine Department of Education (http://www.state.me.us/education/)

published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/education/lres.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions document listing the changes made since 1996 in each subject area.

- **Massachusetts**—Science and Technology (http://info.doe.mass.edu/doedocs/frameworks/sciencetoc.html Preface, overview, rationale, strands and learning standards (for inquiry; physical, life, and earth and space sciences; technology; and science, technology, and human affairs), and evaluation information. Broken down by grade groupings (pre-K to 4, 5 to 8, and high school), with a substantial amount of explanatory information and instructional examples.
- **Michigan**—Technology (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Technology)-Part of the 1994 draft Core Curriculum Content Standards, the document contains an overview, the standards (with brief sample performance tasks or student expectations for early elementary, later elementary, middle school, and high school years), and cross-references to documents from other disciplines. In 1996, the state legislature amended the school code to remove the requirement that districts use the state standards.
- **Minnesota**—The Derpartment of Children, Families and Learning has created a Graduation Standards (http://www.edu.state/mn/us/) page with links to a Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP) page dealing with the Profile of Learning for various grades and subject areas. This page has links to elements of the profile for different grades and sample curricular materials available for download.
- **Nebraska**—An Industrial Technology Education (http://nde4.nde.state.ne.us/Tech/toc.html) page, with a link to an Industrial Technology Framework Project in Adobe Acrobat format.
- **New York**
  - New York State Curriculum Framework for Math, Science, and Technology (http://www.cnyric.org/frameworks/mst/)-Final version, with links to relevant web sites, examples, and a bulletin board you can use to discuss the frameworks with others.

  The State Education Department has mailed out draft curriculum resource guides in several subject areas. Web copies of the guides (http://www.nused.gov/guides/) can be downloaded as lengthy pdf files in the areas of the arts, English language arts, and mathematics, science and technology.

  - A state Information on Curriculum Standards (http://www.nysed.gov/home/facmtg/currinfo.html) page has pdf copies of state curriculum standards and transcripts of Commissioner Mills' teleconference on standards.
  - The Lower Hudson Regional Information Center (http://www.lhric.org/) has set up a Best Practices Database (http://www.lhric.org/best.htm) containing teacher-

developed projects that are aligned with the new math, science, and technology standards.

- **North Carolina**—North Carolina Curriculum Matrix (http:www.dpi.state.nc.us/Curriculum/CrrcMtrx.html)
- **Oklahoma**—The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS) (http://www.sde/state.ok.us/schimp/effschcurr/pass/pass.html) documents. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.
- **Oregon**
  - The Oregon State Education Department has standards documents online on its web site and, in particular, on its What's New (http://www.ode.state,or,us/new/idxnew.htm) page. Common Curriculum Goals (http://www.ode.state.or.us/inst/ccg.pd)(a 201k pdf file) contains curriculum goals, content standards, and benchmarks for grades three, five, eight, and ten. In addition, Oregon's Proficiency-based Admission Standards System (http://pass-osshe.uoregon.edu/), or PASS, contains that state's approach to standards development. PASS grew out of a legislative change in high school graduation requirements from traditional methods, such as Carnegie units, to demonstrations of mastery in certain subject areas. The Oregon State System of Higher Education (OSSHE) offered to prepare standards that would guide college admission and created a group, made up of college and high school staff, that prepared PASS. While the group's work focuses on what is expected of students going to one of Oregon's colleges (and not necessarily what is expected of all high school students), the implication of this project is that all Oregon high schools should follow it. In March 1996, the project released a draft document called Admission Standards: Content & Process Areas Proficiences & Indicators (http://pass-osshe.uregon.edu/docs/docs.html) that listed standards (or "proficiences," as they are called in Oregon) in six subject areas, along with nine skills that weave through the subject areas. One of these skills is "Technology."
  - The Oregon Educational Technology Consortium (OETC) has a short set of Guidelines related to technology standards and assessments.
- **Rhode Island**—The Science Frameworks (http://intruct.rideri.net/doehome/toc.html) contains sections on technology. The DOE web site also has a copy of the Rhode Island Educational Technology Plan (http://instruct.ride.ri.net/doehome/Initiatives.html).
- **Texas**—In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS)(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made

since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. In most cases, the TEKS are scheduled for implementation on September 1, 1998

- **Utah**—Information Technology (http://www.uen.org/utahlink/UtahCore/InfoTech.html) Core Curriculum. A set of pages, each of which provides a brief description of courses for different grades along with relevant standards and course objectives for each of those standards.
- **Vermont**—The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.html) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12). In addition, the Flood Brook Union School (http://www.floodbrook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course/sbyofs.html).
- **Washington**'s Technology standards (gopher://inspire.ospi.wednet.edu:70/11/Tech_Plans/Final_State_Plan) appear on the state's gopher, and there only in Pagemaker format.
- **Wisconsin**—The Second Draft of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/%22) went on line in early 1997 in pdf format. You can download the standards document as one large file or as smaller topical files. Meanwhile, Governor Tommy G. Thompson has offered his own Model Academic Standards (http://www.wisgov.state.wi.us/model.html) as an alternative to the voluntary ones coming from the Department of Public Instruction. The standards, contained in one long text document, present "performance statements" and standards for the primary, intermediate, and upper levels in the areas of English language arts, math, science, and social studies (including technology).

STANDARDS AND FRAMEWORKS BY STATE

Alabama

The Eisenhower National Clearinghouse (http://www.enc.org/) has placed the Alabama Course of Study: Mathematics (http://www.enc.org/reform/fworks/ENC1459/nf_1459.html)(1989) on line. This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there.

Alaska

Alaska does not require that its schools follow mandated standards but it does have voluntary standards in the areas of the arts, English/language arts, foreign language, health, math, science, social studies (broken out into geography, government and citizenship, and history), and technology. A Content Standards for Alaska Students (http://www.educ.state.ak.us/ContentStandards/home.html) page, prepared by the state's Department of Education, lists the areas along with four to ten one-sentence standards for each.

A draft of the state's Arts Framework (http://www.educ.state.ak.us/TLS/finearts/arts1.htm) was placed online in October 1996, containing

- Chapter 1: A common chapter for all Alaska framework documents. It deals with the use of the frameworks and the curriculum development process.
- Chapter 2: A common chapter. It contains background information and definitions on a range of topics.
- Chapter 3: The Content of the Arts-Several draft standards, their relationship with national standards,
- Chapter 4: Instruction in the Arts-A large page (208k) that lists specific standards for dance, drama, literary arts, music, and visual arts.
- Chapter 5: Assessment in the Arts-Guidelines intended to help teachers design their own assessments, followed by pages containing sample assessments in the different arts fields.

The Alaska 2000 Technology Standards (http://ivaldi.jun.alaska.edu/edtech/statewide.html) page has the March 1995 draft of Alaska's five performance standards for technology and several brief performance indicators for each. The site also includes the state's *Goals 2000 Technology Plan.*

Arizona

The Arizona Board of Education adopted state standards in the areas of Language Arts (reading and writing [http://www.ade.state.az.us/standards/la.html]) and Math (http://www.ade.state.az.us/standards/math.html) during the summer of 1996. The state is now working on developing performance objectives and assessments for each area. Drafts went out in November. These contain relevant standards and performance objectives for the levels of readiness (K), foundations (grades 1–3), essentials (grades 4–8), proficiency (grades 9–12), and distinction.

Drafts of six of seven of the remaining proposed standards documents are currently on line. These are short document containing a rationale and a list of four to seven standards..

- The Arts (http://www.ade.state.az.us/standards/arts.html)
- Comprehensive Health (http://www.ade.state.az.us/standards/comp.html), which includes separate standards for Health (http://www.ade.state.az.us/standards/ch.html) and Physical Education (http://www.ade.state.az.us/standards/pe.html).

- Foreign Language (http://ade.state.az.us/standards/fl.html)
- Science (http://ade.state.az.us/standards/science.html)
- Social Studies (not currently available)
- Technology (http://ade.state.az.us/standards/finaltec.html)
- Workplace Skills (http://www.ade.state.az.us/standards/wp.html)

Arkansas

A 1991 state law required districts to review and revise their educational programs. The Arkansas Department of Education (http://arkedu.k12.ar.us/) has a list of four brief Learner Outcomes (http://arkedu.k12.ar.us/user_doc/ade/louts.htm) and has developed Curriculum Frameworks (http://arkedu.k12.ar.us/user_doc/ade/frame/frame.htm) to fit the law's expectations. Each framework document has several strands, with content standards and learning expectations listed for grades K–4, 5–8, and 9–12.

- Art (http://arkedu.k12.ar.us/user_doc/ade/frame/art.htm)-Its two strands in the visual arts are creating and reflecting/responding.
- English Language Arts (http://arkedu.k12.ar.us/user_doc/ade/frame/english.htm)-Its four strands are writing, reading, speaking, and listening.
- Foreign Language (http://arkedu.k12.ar.us/user_doc/ade/frame/forlang.htm)-Its five strands are listening, speaking, reading, writing, and culture.
- Mathematics (http://arkedu.k12.ar.us/user_doc/ade/frame/math.htm)-Its five strands are number sense, properties and operations; geometry; measurement; data analysis, statistics and probability; and algebra and functions.
- Music (http://arkedu.k12.ar.us/user_doc/ade/frame/music.htm)-Its four strands are create and perform; listen, perceive and analyze; cultural and historical contexts; and connect and apply.
- Reading (http://arkedu.k12.ar.us/user_doc/ade/frame/read.htm)-Its three strands are reading knowledge, reading behavior, and reading dispositions. The first and last of these show K–12 standards and learning expectations rather than a K–4, 5–8, and 9–12 breakdown.
- Social Studies (http://arkedu.k12/ar.us/user_doc/ade/frame/socials.htm)-Its six strands are interdependence, continuity and change, cultural perspectives, scarcity and choice, cooperation and conflict, and citizenship.
- Science (http://arkedu.k12.ar.us/user_doc/ade/frame/sci.htm)-Its five strands are scientific inquiry, connections and applications, physical systems, life science systems, and earth/space systems.

California

A relatively new group, called the Commission for the Establishment of Academic Content and Performance Standards (http://www.ca.gov/goldstandards/index.html), is expected to develop the state's newest set of k–12 content and performance standards-first in the areas of reading, writing, and math and somewhat later for science and social studies. The deadline for submitting all of this to the State Board of Education is October 1, 1997. The site has links to the enabling legislation, commission timeline, and meeting information-including minutes of past meetings.

The California Department of Education put the draft Challenge Initiative standards (http://goldmine.cde.ca.gov/challenge/Challenge_Standards.html) on its Goldmine (http://goldmine.cde.ca.gov/) site. A Contents Page (http://goldmine.cde.ca.gov/challenge/Contents.html) provides access to Adobe Acrobat files for Language Arts, math, history-social science, science, health, physical education, visual and performing arts, foreign language, service learning, and career preparation (with specific files for agriculture, business education, industrial and technology education, health careers, and home economics).

Framework OnLine (http://www.worldtouch.com/framework/framework.html) allows you to view the table of contents and some miscellaneous introductory remarks for the earlier state frameworks. The Association of California School Administrators (http://acsa.org/) published a position paper in June 1996 called, Statewide Academic Standards (http://www.acsa.org/original/standards1.html) that supports standards development while describing what standards generally should look like.

The Mendocino Curriculum for the California Frameworks (gopher://quest.arc.nasa.gov:70/11/Classes_You_Can_Teach_Using_the_Internet.Mend) gopher contains lessons for all grades and in many subject areas, developed by California teachers as a way of using the Internet to meet some of the requirements of the earlier California State Frameworks.

Colorado

The Colorado Department of Education's site has a number of relevant documents and links, including:

- Colorado Content Standards & Guidelines (http://www.cde.state.co.us/glbasic.htm)-a November 1995 overview on standards from the Colorado Education Goals Panel.
- Standards Based Education (http://www.cde.state.co.us/stdbased.htm)-A Colorado State Board of Education the policy statement.
- Standards Connection (http://www.cde.state.co.us/glsnwslt.htm)-A good newsletter about state standards.
- The Standards and Assessment Resource Bank (http://cde.state.co.us/stand.htm)-Help for school districts implementing state standards. This page gives a brief description of the bank, a telnet link (along with log-in instructions), and ordering information for purchasing the bank on a Macintosh/Windows CD (the cost is $40; an order form is on line).

- Opportunities for Success (http://www.cde.state.co.us/sesopp.htm)-It lists specific skills students must develop or educators need to employ in order for students to master the state's content standards. This page represents the state's response to people who have expressed concerns that the state's standards may not represent the needs of some students, including those in both handicapped and gifted programs.

The Colorado Model Information Literacy Guidelines (http://www.cde.state.co.us/ftpcde.htm#guidelines) are available in pdf and text formats, with additional rubrics available in a separate pdf file.

In the summer of 1995, the Department of Education put its Model Content Standards (http://www.cde.state.co.us/ftpcde.htm#standards) on line. From this site you can view a hypertext version on line, download a pdf file, or read a plain text file. A typical standard document contains a general introduction that offers a rationale for learning about the subject, followed by the standards themselves. Each standard has several subcategories which are, in turn, elaborated upon for grades K–4, 5–8, and 9–12. In the areas of geography, history, and math, key terms are linked to definitions that appear at the end of their documents.

- Geography Standards. (http://www.cde.state.co.us/geog.htm)
- History Standards. (http://www.cde.state.co.us/hist.htm)
- Mathematics Standards. (http://www.cde.state.co.us/math.htm) A copy can be found on Connect. (http://bcn.boulder.co.us:80/connect/standards/math/math.html)
- Reading and Writing Standards. (http://www.cde.state.co.us/read.htm)
- Science Standards. (http://www.cde.state.co.us/sci.htm) A copy can be found on Connect. (http://bcn.boulder.co.us:80/connect/standards/science/science.html)

In August 1996, second drafts of six standards documents went on line through links from the Model Content Standards (http://www.cde.state.co.us/ftpcde.htm#standards) page-but as pdf files only. The documents are in the fields of:

- The arts (one file each for music and the visual arts).
- Social studies (one file each for civics and economics).
- Foreign language.
- Physical education.

Several teachers have published model lessons using state standards:

- Critical Thinking Discussion (http://www.smoky.org/~nces/Jane_Jackson/CriticalDiscussion/CritThink.html)
- CyberStatistics: English and Writing Lessons (http://www.smoky.org/~nces/Nancy_Long/Index.html)

For some other great sample instructional activities keyed to the state science standards, check out OASIS (http://www-co-xas.colorado.edu/oasis/)(On-line Activities for Standards in School).

Connecticut

No Internet documents have been found.

Delaware

Information coming from the state:

- A good starting point for information about Delaware's standards is Empowering Schools for Excellence: Final Report and Recommendations of Delaware's Education Improvement Commission (http://gopher.udel.edu/rdcenter/eic_final.html)-A large document, submitted in September 1995, which makes educational improvement recommendations for the state as a whole, some of which deal with standards.
- In June 1996, the Delaware Education Network (part of the Delaware Department of Public Instruction) placed the state's New Directions Content Standards (http://www.dpi.state.de.us/dpi/content.html) on line. The main page contains introductory and background material, with links to standards and framework documents in the fields of English/language arts, math, science (not on line as of June 30), and social studies. Each page contains introductory material, core standards (with links to more expansive pages), references, and an excellent glossary that explains key terms. The standards pages themselves contain a restatement of each standard, links to performance indicators for each of four grade level groupings (K–3, 4–5, 6–8, and 9–12), and to pages with "vignettes" (examples of successful classroom application of a particular standard) for each of those same groupings. This site is well organized, clear, attractive, and easy to use-and should prove very helpful to everyone.
- The state's versions of its documents also appear on a site called Delaware Education Network Standards Documents (http://www.udel.edu/dpi/stand.html). From this page you can access both the common introductory text (http://www.udel.edu/dpi/docs.html) for each subject-area document (such as the mission statement) and the specific content standards documents. Social Science (Civics, Economics, Geography, and History) was the only content area available online as of mid-October. The standards are presented by topic (government, for example) and then, more specifically, by grade level. Clicking on a grade level brings up a short listing of sample activities.
- The state also has a page under construction designed to demonstrate model standards (http://www.udel.edu/dpi/model.html) as they are being used in classrooms.
- As part of its Technical Report Series, the Delaware Education Research and Development Center (http://gopher.udel.edu/rdcenter/techseries.html) has issued executive summaries of educator reviewer reaction to the state frameworks in the fields of English Language Arts, Mathematics, Science, and Social Studies.
- The same center has issued several relevant studies that are well worth reading, including Assumptions of Standards-Based Reform and Their Implications for

Policy and Practice (http://gopher.udel.edu/rdcenter/Assumptions_Exec.html) and A Case Study of Delaware's Statewide Systemic Initiative: PROJECT 21 (http://gopher.udel.edu/rdcenter/NSF_Exec.html)

- The Curriculum Consumers Information Service (CCIS [http://www.rdc.udel.edu/CCIS]) has begun to map various instructional materials to the state standards. Only the shell for this effort-along with a few examples, was in place as of early June-which means that educators should check the site regularly.

District of Columbia

No Internet documents have been found.

Florida

The Sunshine State Standards (http://www.frin.edu/doe/curric/prek12/frame.htm) approved by the State Board of Education on May 29, 1996, are available on the Florida Department of Education's web site in the areas of the arts (dance, music, theatre, visual arts), English/ language arts, foreign language, health, math, physical education, science, and social studies. Standards for each area are divided into four grade level groupings (Pre-K to 2, grades 3–5, grades 6–8, and grades 9–12), with a web page devoted to each. A typical page contains major subject area topics with relevant standards and their subcategories elaborated upon underneath. The Eisenhower National Clearinghouse (http://www.enc.org/) has placed The Florida Pre K–12 Science Curriculum Framework (http://www.enc.org/reform/fworks/ENC1267/nf_/1267.html)(1993) on line. This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there.

Georgia

Georgia College has placed the Georgia Quality Core Curriculum (http://doc.ga.peachnet.edu/NetFinder/NetFinder.acgi$Root%3Dgathering materials/Quality Core Curriculum%7C%7C) on line in the areas of the arts (dance, drama, music), English, foreign language, health (including AIDS prevention), math, physical education, science, social studies (including Georgia studies and state and local government), and vocational education. These documents typically list several broad categories for each subject area and, for each grade level, various specific yet brief statements that are intended to guide instruction at the local level.

Hawaii

No Internet documents have been found.

Idaho

The Eisenhower National Clearinghouse (http://www.enc.org/) has placed the Idaho K–12 Mathematics Content Guide and Framework (http://www.enc.org/reform/fworks/ENC3208/nf_3208.html) and the Idaho K to 12 Science Content Guide and Framework (http://www.enc.org/reform/fworks/ENC2972/nf_2972.html)(both 1994) on line. These links take you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there.

Illinois

The Illinois State Board of Education has created an Illinois Learning Standards (http://www.isbe.state.il.us/ils/welcome.html) site that contains the June 1997 proposed frameworks in the areas of the arts, English language arts, foreign language, health, math, physical education, science, and social studies. Each disciplinary page has a chart comparing the June 1997 proposals with the July 1996 draft standards and a link to an Adobe Acrobat file of 1997 proposals.

Indiana

The Indiana Department of Education site now has an Electronic Library (http://ideanet.doe.state.in.us/publications/index.html), with links to the state proficiency guides in math, science (draft), and social studies. The first and last of these are available as pdf documents while the science guide can be read directly on the web site. The proficiencies are organized by topics within grade levels and contain some sample teaching strategies.

Iowa

The Eisenhower National Clearinghouse (http://www.enc.org/) has placed A Guide to Curriculum Development in Mathematics Kansas Mathematics Curriculum Standards: Mathematical Powers for All Kansans (http://www.enc.org/reform/fworks/ENC2854/nf_2854.htm) and the Kansas Curricular Standards For Science (http://www.enc.org/reform/fworks/ENC3131/nf_3131.htm)(1987) and A Guide to Curriculum Development in Science (http://www.enc.org:/reform/fworks/ENC2863/nf_2863.html)(1990) on line. These links take you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there.

Kansas

The state has four curriculum standards documents available in both Word 6 format and as large online pages on its Quality Performance Accreditation (http://www.ksbe.state.ks.us/outcomes/qpa.html) site:

- Communications Curriculum Standards (38K)

- Math Curriculum Standards (97K)
- Science Curriculum Standards (110K)
- Social Studies Curriculum Standards (297K)

The Eisenhower National Clearinghouse (http://www.enc.org/) has placed Kansas Mathematics Curriculum Standards: Mathematical Powers for All Kansans (http://www.encorg/reform/fworks/ENC2854/nf_2854.htm) and the Kansas Curricular Standards For Science (http://www.enc.org/reform/fworks/ENC1379/nf_1379.htm) (both 1993) on line. These links take you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there.

Kentucky

The Kentucky Learning Goals and Academic Expectations (http://www.kde.state.ky.us/caa/expect.html) has six general goals, one of which states that "Students shall develop their abilities to apply core concepts and principles" from seven core areas. Each core area has a separate page which lists subgoals and has links to sample academic applications of the subgoal:

- Mathematics (http://www.kde.state.ky.us/caa/g2math.html)
- Science (http://www.kde.state.ky.us/caa/g2science.html)
- The Arts (http://www.kde.state.ky.us/caa/g2arts.html)
- The Humanities (http://www.kde.state.ky.us/caa/g2arts.html)
- Social Studies (http://www.kde.state.ky.us/caa/g2ss.html)
- Practical Living Studies (http://www.kde.state.ky.us/caa/g2pl.html)
- Vocational Studies (http://www.kde.state.ky.us/caa/g2voc.html)

In mid-July, the education department published a fairly extensive site called Core Content for Assessment (http://www.kde.state.ky.us/assessment/content.html). This site contains material supplementing the Academic Expectations in the various disciplines and "represents the content that has been identified as essential for all students to know and will be included on the state assessment." In other words, the content documents offer brief elementary, middle, and high school curricular examples that districts can (but do not have to) follow as they build their own courses of study.

English/Language Arts

- Core Content for Reading Assessment (http://www.kde.state.ky.us/assessment/content/Reading_3-Column1.html)
- Level Specific Core Content-Reading (http://www.kde.state.ky.us/assessment/content/Reading_5-Column.html)
- Core Content for Writing Assessment (http://www.kde.state.ky.us/assessment/content/Core_Content_for_Writing.html)
- Core Content for Mathematics Assessment (http://www.kde.state.ky.us/assessment/content/Core_Content_for_Math1.html) and Level Specific Core Content-Mathematics (http://www.kde.state.ky.us/assessment/content/Core_Content_for_Math2.html)

- Core Content for Science Assessment (http://www.kde.state.ky.us/assessment/content/Core_Content_for_Science.html)
- Core Content for Social Studies Assessment (http://www.kde.state.ky.us/assessment/content/Core_Content_for_Social.html)
- Core Content for Practical Living Assessment (http://www.kde.state.ky.us/assessment/content/Core_Content_for_Practical.html)
- Core Content for Vocational Studies Assessment (http://www.kde.state.ky.us/assessment/content/Core_Content_for_Vocation.html)

Louisiana

The Louisiana Department of Education has released the state's Content Standards (http://www.doe.state.la.us/os2httpd/PUBLIC/contents/constani.htm). This site lets you view them on screen or download them as WordPerfect 6.1 documents. For the screen versions, clicking on a curriculum area takes you to a page containing an introduction, various supporting documents, and the standards for that subject. The standards documents contain various standards, each of which is followed by an extensive list of benchmarks for grades K–4, 5–8, and 9–12. The subject areas covered are:

- English Language Arts
- Math
- Social Studies

Maine

The Maine Department of Education (http://www.state.me.us/education/) published the March 12, 1997 draft of the State of Maine Learning Results (http://www.state.me.us/education/red.htm). These are separate text and MS Word documents containing the December 1996 versions of the Learning Results in the areas of Art and Music, English/Language Arts, Foreign Language/ESL, Health, Math, Occupational/Business Education, Physical Education, Science, Social Studies, and Technology-as well as a revisions (http://www.state.me.us/education/revis.htm) document listing the changes made since 1996 in each subject area.

Maine's Curriculum Framework for Mathematics and Science (http://www.mmsa.org/cfrnnt-pag.html), from the Maine Mathematics and Science Alliance (http://www.mmsa.org/), is part of the state's Statewide Systemic Initiative. It contains a general set of cross-curricular standards along with valuable material regarding what constitutes good teaching strategies in math and science, brief examples, references, and ideas about assessment. The document can also be downloaded (http://www.mmsa.org/cfdwnlod.html) in either Macintosh or Windows versions in a file that is about one meg big.

Maryland

Maryland has developed various Learning Outcomes (http://www.msde.state.md.us/msde/outcomes/out.html) in the subject areas shown below.

- Math-A rationale; outcomes for grades 3, 5, 8, and 11; performance indicators for grades 3, 5, and 8; and a list of source documents.
- Reading-A rationale, outcomes, an outcomes model, a list of source documents, and a glossary.
- Social Studies-A rationale, outcomes, performance indicators for various topics within the social studies, and a list of source documents.
- Science-A rationale; outcomes; performance indicators for grades 3, 5, 8, and 11; concept indicators for life science, physical science, and earth science K–12 strands; and a list of source documents.
- Writing/Language Usage-A rationale, outcomes, an outcomes model, a list of source documents, and a glossary.

The Eisenhower National Clearinghouse (http://www.enc.org/) has placed Mathematics: A Maryland Curricular Framework (http://www.enc.org/reform/fworks/ENC839/nf_839.html) (1987) on line. This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there.

Massachusetts

The Massachusetts frameworks fit within a five year master plan for the state's Education Reform Initiatives (http://info.doe.mass.edu/edreformtoc.html)(described in detail on the DOE web site). By mid-April 1997, the only framework not approved by the Board of Education was that for social studies (reflecting the nature of the debate about what the framework ought to look like, it used to be called social studies; now it is called history and social science). The pages for each framework have links to the entire document as well as separate links to its various parts.

- Common Chapters (http://info.doe,.mass.edu/doedocs/frameworks/comchptoc.html)-Preface, overview, rationale, and general information.
- The Arts (http://info.doe.mass.edu/doedocs/frameworks/artstoc.html)-Preface, overview, rationale, strands and learning standards, and selected references
- English Language Arts (http://info.doe.mass.edu/doedocs/frameworks/englishTOC.html)-Contains guiding principles ("philosophical statements about learning and teaching"), a section on early literacy and the skills students need to have mastered by the end of grade 3, and 28 standards clustered into four strands (language, literature, composition, and media) and briefly presented in terms of four grade levels (PreK–4, 5–8, 9–10, and 11–12). Various appendices present reading suggestions, some sample lessons, and other supplementary material.
- Health (http://info.doe.mass.edu/doedocs/frameworks/healthtoc.html)-Preface,

overview, rationale, strands and learning standards, and selected references.

- Mathematics (http://info.doe.mass.edu/doedocs/frameworks/Mathtoc.html)-Preface, overview, rationale, strands and learning standards (for number sense; patterns, relations, and functions; geometry and measurement; and statistics and probability), suggested readings, and evaluation information.
- Science and Technology (http://info.doe.mass.edu/doedocs/frameworks/science-toc.html)-Preface, overview, rationale, strands and learning standards (for inquiry; physical, life, and earth and space sciences; technology; and science, technology, and human affairs), and evaluation information.
- World Languages (http://info.doe.mass.edu/doedocs/frameworks/wlangtoc.html)-Preface, overview, rationale, strands and learning standards (for communication, culture, making connections, and participation), suggested readings, and selected resources.
- Social Studies-The social studies framework has proven to be controversial, with one version having been withdrawn and another draft substituted. On June 2, 1997, the Commissioner of Education sent out copies of the June draft of the History and Social Science Curriculum Framework (A:\frameworks/his697toc.html) and asked for reactions by June 9 for a June 16 hearing. An April draft (http://info.doe.mass.edu/doedocs/frameworks/history1.html) is also on the state's web site.
- The Professional Standards Committee of the Massachusetts School Library Media Association has prepared a Standards for School Library Media Centers in the Commonwealth of Massachusetts (http:info.doedocs.mass.edu/LMstandards/lmstandards.html), now available on the DOE page. The document contains recommendations about library media center staffing levels, collections, and budgets; various library media standards; and sample policies on such of topics as student use of the Internet. (Thanks to Margaret Hallisey, 1996–97 President of the MSLMA for alerting me to this document.)
- ArtsEdge (from the Kennedy Center [http://artsedge.kennedy-center.org/stand.html]) has a page about the Massachusetts Arts Curriculum Content Draft (http://artsedge.kennedy-center.orrg/db/gs/fr-0001.html) with links to the executive summary (a brief document) and several documents about assessment methods. The latter primarily contain ideas about assessment rather than articulated guidelines for its implementation.

Michigan

Michigan originally approved a set of Core Curriculum Content Standards in August 1994 containing content standards and performance benchmarks. During the 1995–96 legislative session, the legislature amended the school code, removing the mandate the districts use the state's standards and replacing it with a requirement that each district implement their own-which could be those from the state.

In May, the Michigan Department of Education issued a set of Questions and Answers for the Revised School Code (http://www.mde.state.mi.us/cgi-bin/gf/leg/QA-CODE) dealing with the many changes coming from the legislature. This reads, in part:

Question: What changes have been made to the core curriculum section of the Revised School Code?

Answer: Section 1278 of the Revised School Code has been amended to remove references to the state moving to a mandated state core academic curriculum in 1996. The State Board of Education is required to develop recommended model core academic curriculum content standards. The State Board approved model content standards in July of 1995. Areas covered in the standards are English language arts (includes reading and writing), social studies (includes geography, history, American government and economics), mathematics and science. Concerning the model content standards, each school district is required to establish and provide to all students a local core academic curriculum. Any deviation from the local districts may supplement the core academic curriculum with additional courses and programs.

The Michigan Department of Education Curriculum Development Program (http://cdp.mde.state.mi.us/) has the original Model Content Standards for Curriculum (http://cdp.mde.state.mi.us/ContentStandards/default.html) in the areas of English language arts, math, science, and social studies. Each link takes you to a page listing the relevant standards, with each standard having a link to a slightly more elaborate version, broken down by general grade level. The bottom of the page also has links to a vision statement in each curricular area as well as to sample assessment questions.All of the draft documents that went out for public comment that fall are linked to the department's gopher (gopher://gopher.mde.state.mi.us/11/serv/curric/corecur) site. A typical document contains an overview, the standards (with brief sample performance tasks or student expectations for early elementary, later elementary, middle school, and high school years), and cross-references to documents from other disciplines. (The Core Curriculum Content Standards (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Core_Curriculum_Standards) can also be downloaded as a single, 547k file.)

- Arts Education (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Arts_Education)
- Career and Employability Skills (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Career_526_Employability_Skills)
- English Language Arts (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/English_Language_Arts)
- Health Education (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Health_Education)
- Life Management Education (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Life_Management_Education)
- Mathematics (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Mathematics)
- Physical Education (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Physical_Education)

- Science (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Science)
- Social Studies (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Social_Studies)
- Technology (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/Technology)
- World Languages (gopher://gopher.mde.state.mi.us:70/00/serv/curric/corecur/World_Languages

Minnesota

Minnesota plans to require graduating students to pass seven competency tests of basic skills in the fields of geography, government, math, physical health and safety, reading, science, and writing. In addition, students will encouraged to reach toward a higher set of standards in these seven areas by working on a "Profile of Learning," the state version of which contains over sixty content standards-many of them interdisciplinary.Minnesota's Department of Children, Families and Learning (http://www.educ.state.mn.us/) has created a Graduation Standards (http://www.educ.state.mn.us/grad/gradhom.htm) page with links to:

- Graduation Standards Information and Brochures (http://www.educ.state.mn.us/grad/infobro.htm), containing summary information about standards, pilot sites, and the manner of school involvement.
- Profile of Learning and Performance Packages (http://www.educ.state.mn.us/cgi-win/grad2.exe/MP), dealing with the Profile of Learning for various grades and subject areas. It contains a brief description of what a performance package is ("a series of classroom assignments that, taken together, indicate whether a student has learned the skills and knowledge specified in the content standard.")
- A Profile of Learning for primary, intermediate, middle level, and high school grades. Clicking on any one of the grades takes you to a page listing the ten elements of the profile. Clicking on one of these leads to a page with one or more brief examples of that element.
- A Table of Available Performance Packages for primary, intermediate, middle level, and high school grades. When you select a grade range, you go to a page that lists performance packages by title, course, standard, or release date. At this point you can click to read a brief description or you can download the whole package as a MS Word or a pdf file.
- Pilot Sitings-a newsletter about the graduation standards, the June issue of which summarizes the State Board of Education recommendations about implementing the standards.
- A News Group.
- Web66 (http://web66.coled.umn.edu/), through its Mustang (http://mustang.coled.umn.edu/) site, has published an early, somewhat out-of-date version of the Minnesota State Graduation Standards (http://mustang.coled.umn.edu/Started/Standards.html) on a Required Profile of Learning (http://mustang.coled.umn.edu/Started/Required.html) page.

- ArtsEdge (from the Kennedy Center [http://artsedge.kennedy-center.org/stand.html]) has a page about the Minnesota FACS (http://artsedge.kennedy-center.org/db/gs/fr-0002.html) with definitions and rationales for dance, music, and theatre/dramatic arts.
- SciMathMN (http://www.informns.k12.mn.us/scimathmn.html) has information and resources related to math and science, including news about its programs and a SciMathMN listserv.

Mississippi

No Internet documents have been found.

Missouri

The Proposed Show-Me Standards (http://services.dese.state.mo.us/standards/) were approved by the State Board of Education as a proposed regulation on October 19, 1995, along with some supporting documents:

- Overview of Performance Standards (http://services.dese.state.mo.us/standards/process.html)
- Overview of Knowledge Standards (http://services.dese.state.mo.us/standards/content.html)
- Specific subject area standards pages generally list general goals, each of which is elaborated on slightly on its own separate page.
- Communications Arts (http://services.dese.state.mo.us/standards/comarts.html)
- Fine Arts (http://services.dese.state.mo.us/standards/finearts.html)
- Health/Physical Education (http://services.dese.state.mo.us/standards/healthed.html)
- Mathematics (http://services.dese.state.mo.us/standards/math.html)
- Science (http://services.dese.state.mo.us/standards/science.html)
- Social Studies (http://services.dese.state.mo.us/standards/ss.html)
- The Outstanding Schools Act Home Page (http://tiger.coe.missouri.edu/OSA/OSAHomePage.html) contains some additional information for Missouri districts working on standards development.

Montana

The Eisenhower National Clearinghouse (http://www.enc.org/) has placed the Montana Toolkit for Mathematics Curriculum Development (http://www.enc.org/reform/fworks/ENC1665/nf_1665.html) (1994 draft) on line. This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there. A Montana Curriculum (http://161.7.114.15/opi/Curriculum.html) page from the state's education department has the following curriculum guides available in Adobe Acrobat format. No previews are available.

- English/language (7 files): English, Reading, Writing, Listening, Literature, Media, and Speaking
- Health
- Second Language (including ESL)
- Thinking

Nebraska

The Nebraska Department of Education's web site has a Policy Statement and Standards page (http://nde4.nde.statene.us/IPS/STANDARD/PolicStand.html), containing a rationale for the use of standards, various definitions, and brief lists of standards and indicators in the areas of reading and writing, math, social studies, and science. In addition, the DOE has links to several curriculum sites that have information about framework development in specific subject areas. These include:

- ARTnet (http://nde4.nde.state.ne.us:80/ARTnet/) which contains part of the state's arts frameworks (http://nde4.nde.state.ne.us:80/ARTnet/frameworks/) and some supplementary material.
- A Business Education (http://nde4.nde.state.ne.us/BUSED/be.html) page, with a statement about the state's business education curriculum framework (http://nde4.nde.state.ne.us/BUSED/currfrmwrk.html) and a second page with links to various lesson plans (http://nde4.nde.state.ne.us/BUSED/becurr.html).
- An Industrial Technology Education (http://nde4.nde.state.ne.us/ITech/toc.html) page, with a link to an Industrial Technology Framework Project (http://nde4.nde.state.ne.us/Itech/frame.html)(the page contained only a title and graphic as of the end of May).
- The Nebraska Social Studies Framework Project (http://nde4.nde.state.ne.us/SS/ss.html) page, with fairly general information and links.

Nevada

The Nevada State Education Department has a page with some basic background information about its Standards, Curricula and Assessments Team (http://nsn.k12.nv.us/nvdoe/nvdoe/sca/index.html). (While the page refers to several standards documents, it has no links to them.

New Hampshire

The state's New Hampshire Education Improvement and Assessment Program (NHEIAP [http://www.state.nh.us/doe/initi.htm]) is linked to a question and answer page and to four curriculum frameworks.

- K–12 English Language Arts Curriculum Framework (http://www.stat.nh.us/doe/englang.htm)-Lists broad goals along with proficiency standards for grades 3, 6, and 10 in reading, writing, speaking, literature, and language use.
- K–12 Math Curriculum Frameworks (http://www.state.nh.us/doe/math.htm)-Lists K–12 curriculum and proficiency standards along with examples for specific grades on the topics of problem solving and reasoning; communication and connections; numbers, numeration, operations, and number theory; geometry, measurement, and trigonometry; data analysis, statistics, and probability; functions, relations, and algebra; mathematics of change; and discrete mathematics.
- K–12 Science Curriculum Framework (http://www.state.nh.us/doe/science.htm)-Lists broad goals along with proficiency standards for grades 6 and 10 in "Science as Inquiry," "Science, Technology, and Society," "Life Science," "Earth/Space Science," "Physical Science," and "Unifying Themes and Concepts."
- K–12 Social Studies Curriculum Framework (http://www.state.nh.us/doe/sost.html)-Lists broad goals along with proficiency standards for grades 3, 6, and 10 in civics, economics, geography, and history.

The math and science frameworks are mirrored at Plymouth State College, linked to a K–12 Mathematics and Science Curriculum Frameworks (http://oz.plymouth.edu/~mathdept/curricula/frmindex.html) page (you can also download the frameworks in.rtf format from here). In addition, the page has a variety of supplemental resources for each subject area. Each of these "Addendum" contains instructional ideas, lessons, and assessment strategies tied to different parts of each framework

- NH K–3 Math Curriculum Addendum (http://oz.plymouth.edu/~mathdept/curricula/k3mtable.html)
- NH 4–6 Math Curriculum Addendum (http://oz.plymouth.edu/~mathdept/curricula/46table1.html)
- NH 7–12 Math Curriculum Addendum-anticipated in September.
- NH K–6 Science Curriculum Addendum (http://oz.plymouth.edu/~mathdept/curricula/k6stable.html)
- NH 7–10 Science Curriculum Addendum-anticipated in September.

New Jersey

The New Jersey State Education Department offers the February 1996 Core Curriculum Standards (http://www.state.nj.us/education/cor_cura.pdf) as a 351K Adobe Acrobat file as well as a Core Curriculum Content Standards (http://www.injersey.com/Education/NJDOE/)

page. The latter contains an introduction followed by five to six standards in each of the different content areas. Each standard has its own page containing a descriptive statement that briefly elaborates on the standard and various progress indicators for grades 4, 8, and 12. These standards were officially adopted by the state's Board of Education on May 1, 1996.

- Cross-Content Workplace Readiness (http://www.injersey.com/Education/NJDOE/05ccwrready,html)
- Visual and Performing Arts (http://www.injersey.com/Education/NJDOE/06artsintro.html)
- Comprehensive Health and Physical Education (http://www.injersey.com/Education/NJDOE/07hpeintro.html)
- Language and Arts Literacy (http://www.injersey.com/Education/NJDOE/08lang-intro.html)
- Mathematics (http://www.injersey.com/Education/NJDOE/mathintro.html)
- Science (http://www.injersey.com/Education/NJDOE/10sciintro.html)
- Social Studies (http://www.injersey.com/Education/NJDOE/11socintro.html)
- World Languages (http://www.injersey.com/Education/NJDOE/12wlangintro.html)

The Education Department's Strategic Plan for Systemic Improvement of Education in New Jersey (http://www.state.nj.us/education/doestray.htm) provides a rationale for changes going on in the state.

The Fall 1995 draft of the New Jersey Core Curriculum Content Standards (http://prism.prs.k12.nj.us/WWW/OII/NJCCC.html) remains available from the Online Internet Institute (http://prism.prs.k12.nj.us/WWW/OII/OIIhome.html). A typical document contains a short list of standards (stated in very general terms, with no breakdown by grade level) and one or more links to relevant net resources.

The New Jersey Mathematics Coalition (http://dimacs.rutgers.edu/nj_math_coalition/) has help and information about the New Jersey Mathematics Standards and Curriculum Framework (http://dimacs.rutgers.edu/nj_math_coalition//std_men.html)

New Mexico

The Center for the Education and Study of Diverse Populations (http://tijeras.cesdp.nmhu.edu/)(CESDP) at New Mexico Highlands University maintains a Standards and Benchmarks (http://tijeras.cesdp.nmhu.edu/standards/standards.html) site with a Technical Assistance Guide that has links to standards approved by the State Board of Education in August 1996 in the areas of language arts, math, modern and classical languages, science, and social studies. Each page lists the relevant standards; clicking on the name of a category for a particular standard will take you to another page containing benchmarks for K–4, 5–8, and 9–12.

New York, New York State

The New York State Education Department has various bulletins related to standards and frameworks on its Elementary, Middle, Secondary, and Continuing Education (EMSC) Gopher (gopher://unix10.nysed.gov:/11/emsc). Among those worth reading are:

- Higher Graduation and Testing Requirements (November/December 1995)
- Higher Standards in English Language Arts and Mathematics, Science and Technology (February/March 1996 issue of the School Executive's Bulletin
- Overall Strategy for Raising Standards for Students in New York State (January 1996 issue of the School Executive's Bulletin
- Raising Student Achievement Standards: State and Local Partnerships to Build Capacity for School Restructuring and Staff and Curriculum Development (February 29, 1996)

The State Education Department has mailed out draft resource guides in several subject areas. Versions called Curriculum Resource Guides on the Web (http://www.nysed.gov/guides/) can be downloaded as lengthy pdf files in the areas of the arts, English language arts, and mathematics, science and technology.

A state Information on Curriculum Standards (http://www.nysed.gov/home/facmtg/currinfo.html) page has pdf copies of state curriculum standards and transcripts of Commissioner Mills' teleconference on standards.

The Board of RegentsThe New York State Board of Regents approved the last of the new curriculum frameworks documents this summer and appears fully committed to implementing a standards based curriculum. It spells out its six goals for the state's schools in a policy statement called Leadership and Learning (http://www.nysed.gov/regents/strategy.html). Of the six, the first two deal explicitly with standards. ("All students will meet high standards for academic performance and demonstrate the knowledge and skills required by a dynamic world, " and "All educational institutions will meet Regents high performance standards.")

Available from OCM BOCESThe state has slowly but steadily been distributing copies of its frameworks to school districts. Most are available on line from OCM BOCES (the Onondaga-Cortland-Madison BOCES Regional Information Center [http://www.cnyric.org/]), linked through its State Standards (http://www.cnyric.org/standards/) site. Each content area page on this site lets you download the final framework for that document and associated sample student work as pdf files. You can also view abbreviated versions of the frameworks online, relevant internet resources, and examples or sample lessons. In addition, you can participate in a bulletin board discussion of a particular framework. While not every part of this site is fully implemented at this time, it looks like it will become an excellent resource for all New York State educators.

- The Arts (http://www.cnyric.org/standards/aarts/arts.html)
- Career Development and Occupational Studies (not yet available). In the meantime, the Preliminary Draft Framework for Career Development and Occupational Studies (gopher:unix10.nysed.gov:70/11/emsc/office/pubs/ciai/pdf-cdos)(November 1995), is available from the NYS Education Department's gopher.

- English Language Arts (http://www.cnyric.org/standards/ela/ela.html)
- Health, Physical Education, and Home Economics (http://www.cnyric.org/standards/h_pe_he/h_pe_he.html)
- Languages Other Than English (http://www.cnyric.org/standards/lote/lote.html)
- Math, Science, and Technology (http://www.cnyric.org/standards/mst/mst.html)
- Social Studies (earlier draft only) (http://www.cnyric.org/frameworks/SocStud/)
- Implementation Plan for Pilot Assessment in New York State (http://www.cnyric.org/testscore/)-The timeline, by subject and grade level.

Available from the Lower Hudson Regional Information Center: The Lower Hudson Regional Information Center (http://www.lhric.org/) has set up a Best Practices Database (http://www.lhric.org/best.htm) containing teacher-developed projects that are aligned with the new math, science, and technology standards..

- **New York City**—NYCENet (http://205.232.151.90/), the New York City Educational NETwork has an Educational Resources (http://205.232.151.90/teach_learn/edrsurse.html) page containing links to various city frameworks. In general, the links take you to lists of "curriculum frameworks expectations" for elementary, middle, and high school grades. Each "expectation" has a link to a relevant net site and some brief plans about what students should do at that site. This approach looks very helpful for teachers and most of the sites and plans are good, but teachers should explore the sites ahead of time, do their own detailed planning, and read the cautionary notes that accompany some of the site descriptions.

North Carolina

North Carolina has an innovative page, the Curriculum Matrix (http://www.dpi.state.nc.us/Curriculum/CrrclmMtrx.html), which shows a list of subjects reading down and various grade levels reading across. Click on the intersection you want, and you are taken to a relevant curriculum document that, among other things, may list standards for that field along with curricular information and sample lesson plans. Curriculum areas overed include: Arts Education, English/Language Arts, Computers, Health, Foreign Languages, Math, Science, Social Studies, and Vocational Education.

North Dakota

The Eisenhower National Clearinghouse (http://www.enc.org/) has placed the North Dakota North Dakota Curriculum Frameworks Volume I: Language Arts, Library Media, Mathematics, Science, Social studies (http://www.enc.org/reform/fworks/ENC1375/nf_1375.htm) (1993) on line. These links take you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there.

Ohio

On a page called Ohio Standards (http://www.ode.ohio.gov/www/standards/standards.html), the Ohio Department of Education has published a December 1995 draft of Prekindergarten through Grade 12 Standards (gopher://gopher.ode.ohio.gov:00/00/gopher_root1%3A%5B_ode._standards%5Dfeb95_std3.txt). This lengthy file (it is over 300k big) serves more as a framework and source of definitions than as a reference for Ohio standards. Few teachers will want to download it. A second document called Guide to Standards for Ohio Schools (http://www.ode.ohio.gov/www/standards/guide_to_stds.txt) and dated July 1996, briefly states five "guiding principles for development of the standards" and offers some basic definitions. This guide implies that standards development in Ohio is ongoing and incomplete. In the field of social studies, you can download a long text file (dated 1993 but listed as being recently adopted), called the Ohio Model Competency-Based Social Studies Program (http://www.iac.net/~pfilio/model.txt).Diana Fessler (http://www.fessler.com/), a member of the Ohio State Board of Education, uses her personal web page to express her opinions on a variety of subjects-including her serious reservations about the Ohio standards.

Oklahoma

The Oklahoma State Department of Education (http://www.sde.state.ok.us/) has a page about the state's Priority Academic Student Skills (PASS) (http://www.sde.state.ok.us/schimp/effschcurr/pass//pass.html) documents. First used in the 1993–94 school years, these contain statements of what students should know or be able to describe, explain, or perform at a particular grade level. Local districts are expected to construct their own curricula from these statements. Several separate files deal generally with assessment. PASS was reviewed and revised during the 1996–97 school year.

Oregon

The Oregon State Education Department has placed Goals 2000 and various standards documents online on its web site. These include:

- Oregon Goals 2000 State Plan-Executive Summary (http://www.ed.gov/G2K/plans/OregonG2K/AnnoPlan/exesum.html), which contains a description of the state plan, assessment strategies, and the plan's likely impact on local communities.
- The current What's New (http://www.ode.state.or.us/new/idxnew.htm) page gives access to standards documents that are available as pdf files. They were created in landscape format and saved that way into Adobe Acrobat. While this makes them hard to read on the screen, they print out just fine.
- The larger of the two files, Common Curriculum Goals (http://www.ode.state.or.us/inst/ccg.pdf),covers the curricular areas of the arts, English, foreign language, health, math, physical education, science, social studies, technology, and something called essential learning skills. For each area, the the goals document contains various common curriculum goals, content stan-

dards, and benchmarks for grades three, five, eight, and ten (with the exception of second languages, where the benchmarks are for three stages of novice and one of intermediate performance).

- The second file, Performance Standards (http://www.ode.state.or.us/inst/perstan.pdf), describes and gives examples of standards and assessments for English and math.

Oregon's Proficiency-based Admission Standards System (http://pass-osshe.uoregon.edu/), or PASS, contains that state's approach to standards development. PASS grew out of a legislative change in high school graduation requirements from traditional methods, such as Carnegie units, to demonstrations of mastery in certain subject areas. The Oregon State System of Higher Education (OSSHE) offered to prepare standards that would guide college admission and created a group, made up of college and high school staff, that prepared PASS. While the group's work focuses on what is expected of students going to one of Oregon's colleges (and not necessarily what is expected of all high school students), the implication of this project is that all Oregon high schools should follow it. In March 1996, the project released a draft document called Admission Standards: Content & Process Areas Proficiencies & Indicators (http://pass-osshe.uoregon.edu/docs/docs.html) that listed standards (or "proficiencies," as they are called in Oregon) in the major subject areas.

Information about PASS available on the net includes various PASS Documents (http://pass-osshe.uoregon.edu/docs/docs.html) in Adobe Acrobat format and PASS Frequently Asked Questions (http://pass-osshe.uoregon.edu/faq/faq.html). The Oregon Educational Media Association (http://teleport.com/~oema/) has prepared Information Literacy Guidelines (http://www.teleport.com/~oema/infolit.html) for the Oregon Common Curriculum Goals in English/Language Arts as well as for some portions of the arts, health, math, science, and social studies. The guidelines correlate these standards and goals to the draft Information Literacy Standards developed by AASL and AECT.

The Oregon Educational Technology Consortium (http://www.teleport.com/~oetc/)(OETC) has a short set of Guidelines (http://www.oetc.org/guuide/gdlnind.html) related to technology standards and assessments.

Pennsylvania

The Pennsylvania Department of Education offers:

- Pennsylvania's Proposed Academic Standards. (http://www.cas.psu.edu/docs/pde/standards/stan.html) This page provides access to background information about state standards, a comparison of the proposed standards to the ill-fated OBE proposal of several years ago, and Adobe Acrobat versions of the proposed standards for math and for reading and writing. (Science standards should be out later this summer or early in the fall of 1997).
- A Standards and Assessment (http://www.cas.psu.edu/docs/pde/ESSTAND.HTML) page, with links to assessment handbooks for math, reading, and writing.

The Eisenhower National Clearinghouse (http://www.enc.org/) has placed the *Pennsylvania Mathematics Curriculum Framework: 1994* (http://www.enc.org/reform/

fworks/ENC1795/nf_1795.htm) on line. This link takes you to an introductory page. If you want to see the relevant framework, go to the bottom of the page and click on the table of contents button located there.

Rhode Island

One Rhode Island Department of Education site has an Educational Projects (http://www.ri.net/RIDE/projects.html) page that mentions but does not link to the Draft Proposed Standards and Curriculum Frameworks for Rhode Island in language arts, math, science, and foreign language.A second Department of Education site (http://instruct.ride.ri.net/ride_home_page.html) has a Department Wide Initiatives (http://instruct.ride.ri.net/doehome/Initiatives.html) page which currently provides access to:

- English/Language Arts (http://instruct.ride.ri.net/TOC.HTML), which contains links to a description of how Rhode Island has begun developing its Common Core of Learning and its associated frameworks along with nine standards, each with an accompanying chart that divides the standard into "descriptors" of what students should generlly be able to do at four different levels.
- Mathematics Frameworks (http://instruct.ride.ri.net/MATHCHRT.HTML), which has a large grid with grade level going down and standards areas going across. The intersection lists concrete skills.
- Science Frameworks (http://instruct.ride.ri.net/doehome/toc.html), which contains an overview of the Rhode Island Common Core of Learning, several pages of supporting material, and four core pages dealing with science topics (technology, physical science, the living environment, and the human organism). These list relevant standards, associated benchmarks (for grades K–2, 3–5, 6–8, and 9–12), and suggested instructional activities.

South Carolina

The South Carolina Educational Initiatives (http://www.state.sc.us/sde/framewks/intindex.htm) page has the following documents, each of which contains a list of standards and some sample activities.

- Visual and Performing Arts Curriculum Framework (http://www.state.sc.us/sde/framewks/art.htm)-Standards for dance, drama, music, and the visual arts.
- Foreign Languages Curriculum Framework (http://www.state.sc.us/sde/framewks/foreign.htm)
- Mathematics Curriculum Framework (http://www.state.sc.us/sde/framewks/math.htm)

South Dakota

The South Dakota State Board of Education has a page (http://www.state.sd.us/state/executive/deca/chapter1/chapter1.htm) with a downloadable 147k EXE file containing ten MS

Word files with the state's content standards. These working drafts of the standards were submitted to the South Dakota State Board of Education in March,1996 and received a public hearing before the State Board in that Jude. The South Dakota Content Standards for communications, foreign language, civics, geography, history, fine arts, health, mathematics, and science were formally endorsed by the State Board on June 17, 1996. (If you have a Mac, download the EXE and run it through Stuffit Expander to get files that are readable by either Word 6 or BBEdit.)

Tennessee

No Internet documents have been found.

Texas

In May 1997, the Texas Education Agency (http://www.tea.state.tx.us/) published new versions of the Proposed New Texas Essential Knowledge and Skills (TEKS)(http://www.tea.state.tx.us/sboe/rules/proposed/). Each subject area document includes comments from various experts and information about changes made since the last version of the document. The TEKS themselves contain basic understandings, knowledge and skills expectations, and performance descriptions for each content area. Files are available for Fine Arts, English/Language Arts, Foreign Language/ESL, Health, Home Economics, Math, Occupational/Business Education (including agriculture), Physical Education, Science, Social Studies, and Technology. In most cases, the TEKS are scheduled for implementation on September 1, 1998.

The Texas Center for Reading and Language Arts (http://www.tenet.edu/teks/language_arts/) seeks to serve as a source of exemplary lessons and other instructional material for teachers to use when implementing the new TEKS (Texas Essential Knowledge and Skills). It has some resources currently on line and plans to incorporate a lot more-including work that teachers can submit through this site. (Thanks to enesch@geocities.com for this information.)

A Texas Alternative Document Draft (http://www.htcomp.net/tad/) has been written by a group of people who believe that the Texas English language arts standards have set off in the wrong direction. They argue that standards need to state explicitly what students and teachers are expected to know or do, to focus on content and not process, and to teach reading through a heavy emphasis on phonics.

The Social Studies Center for Educator Development (SSCED)(http://www.tenet.edu/teks/social_studies/main.html) has a well-designed and cross-referenced version of the social studies TEKS, along with links to various resources (including an excellent one with lessons illustrating ways to use technology (http://www.tenet.edu/teks/social_studies/ssced/techno.html) to teach social studies).

Texas has developed library standards through the Texas State Library rather than the Texas Education Agency. The School Library Standards for Texas (http://www.tsl.state.tx.us/LD/pubs/schoolibstand.htm)(adopted on May 19, 1997 by the Texas State Library and Archives Commission) contain recommendations about what a library should look like, how it should be staffed, and the kind of resources it should offer.

Utah

The Utah Education Network (http://www.uen.org/) has put the standards for the state's Core Curriculum on line. A home page (http://www.uen.org/utahlink/UtahCore/CoreHome.html) provides a brief history of the core and an overview of what it requires of elementary and secondary students in various subject areas. You can link to each of these areas separately, through the home page or through the list below, or you can link through a common index (http://www.uen.org/utahlink/UtahCore/IndexAll.html). There is also a separate index for the K–6 Core Curriculum (http://www.uen.org/utahlink/UtahCore/K-6.html), listing subject area requirements by grade level (though the same information can also be accessed through the subject area listings).Each subject area has a number of pages associated with it. A typical page provides a brief course description for the grade and subject it is dealing with along with relevant standards and course objectives for each of those standards.

- Art (http://www.uen.org/utahlink/UtahCore/Art.html)
- Health (http://www.uen.org/utahlink/UtahCore/Health.html)
- Information Technology (http://www.uen.org/utahlink/UtahCore/Info Tech.html)
- Language Arts (http://www.uen.org/utahlink/UtahCore/LangArts.html)
- Library Media (http://www.uen.org/utahlink/UtahCore/Media.html)
- Physical Education (included as part of the Health standards)
- Math (http://www.uen.org/utahlink/UtahCore/Math.html)
- Music (http://www.uen.org/utahlink/UtahCore/Music.html)
- Science (http://www.uen.org/utahlink/UtahCore/Science.html)
- Social Studies (http://www.uen.org/utahlink/UtahCore/SocialStudy.html)
- Vocational Education (http://www.uen.org/utahlink/UtahCore/Vocational.html)- This currently shows only a seventh-and eighth-grade course.

The Utah State Office of Education's Curriculum Educational Resources (http://www.usoe.k12.ut.us/curr/instruction.html) page is an index to USOE resources for each curricular area, with each subject area page having a link to the relevant UEN pages mentioned above.

Vermont

The Vermont State Education Department has a Framework of Standards and Learning Opportunities (http://www.state.vt.us/educ/stand/page3.htm) page that has links to all of the state's frameworks-individually (as html pages) or as a group (in an Adobe Acrobat file). Each framework lists pre-K to grade 12 standards and, in most cases, some briefly-stated general ways of knowing when a student has met those standard at different levels (generally, but not always, pre-K to grade 4, grades 5 to 8, and grades 9 to 12).

The Flood Brook Union School (http://www.flodbrook.k12.vt.us/) has its own copies of the frameworks online on its VeeOne (http://www.floodbrook.k12.vt.us/veeone/starter.html) page. So does the Addison Central Supervisory Union (http://www.acsu.k12.vt.us/course/sbuofs.html).

The Vermont standards are organized into seven topical areas:

- Communications-reading, writing, listening, expression, and information technology
- Reasoning and Problem Solving
- Personal Development-generally health and physical education
- Civic/Social Responsibility-including a standard on community service
- Arts, Language, and Literature-including foreign language (referred to as "non-native language")
- History and Social Sciences
- Science, Mathematics, and Technology

Virginia

In June 1995, the Virginia Board of Education approved standards in the fields of English, history, math, and science. These appear on two different sites. The Virginia Department of Education's Standards of Learning (http://www.pen.k12.va.us/go/Sols/home.shtml) page is an index to the four documents:

- English Standards of Learning (http://www.pen.k12.va.us/go/Sols/english.html)
- History and Social Science Standards of Learning (http://www.pen.k12.va.us/go/Sols/history.html)
- Mathematics Standards of Learning (http://www.pen.k12.va.us/go/Sols/math.html)
- Science Standards of Learning (http://www.pen.k12.va.us/go/Sols/science.html)

Meanwhile, Virginia Tech has its own Standards of Learning (http://pixel.cs.vt.edu/sol.html) page whose major difference is that it offers the opportunity to search the standards by keyword and find, in context, all cases where that word appears.

- English Standards of Learning (http://pixel.cs.vt.edu/sol1.html)
- History and Social Science Standards of Learning (http://pixel.cs.vt.edu/sol2.html)
- Mathematics Standards of Learning (http://pixel.cs.vt.edu/sol3.html)
- Science Standards of Learning (http://pixel.cs.vt.edu/sol4.html)

Washington

The Washington Commission on Student Learning Home Page (http://csl.wednet.edu/) contains links to relatively brief standards documents called the Essential Academic Learning Requirements (http://csl.wednet.edu/EALR/EALR_note.html). You can download summary statements or the full documents (in Word 5 form) for:

- The Arts (http://csl.wednet.edu/EALR/Arts.html)
- Communications (http://csl.wednet.edu/EALR/Communications_html)
- Health and Fitness (http://csl.wednet.edu/EALR/Health.html)
- Math (http://csl.wednet.edu/EALR/Math_html)
- Reading (http://csl.wednet.edu/EALR/Reading_html)
- Science (http://csl.wednet.edu/EALR/Science.html)
- Social Studies (http://csl.wednet.edu/EALR/Social_studies.html)
- Writing (http://csl.wednet.edu/EALR/Writing_html)
- Technology standards (gopher://inspire.ospi.wednet.edu:70/11/Tech_Plans/Final_State_Plan) appear on the state's gopher, and there only in Pagemaker format.

An Assessment (http://csl.wednet.edu/Assessments/Assessment.html) page offers a "Preview of the Assessment System" by the assessment director and some sample assessment items .A CSL Policy Briefs (http://csl.wednet.edu/material/Material_menu.html) page contains research on topics related to standards and assessment. These papers have relevance beyond the state of Washington.Background information about the development of Washington's program is available on a Flash Back (http://csl.wednet.edu/CISL/Legislative/HISTORY-TOC.html) page while the enabling legislation (http://csl.wednet.edu/CISL/Legislative/ALL1209OLD.html) is available separately.

Prepared by the Office of the Superintendent of Public Instruction and the Washington Library Media Association in 1996, the state's Essential Skills for Information Literacy (http://www.wlma.org/literacy/eslintro.htm) briefly defines six essential skills and benchmarks them at three different levels (roughly speaking, the fourth, seventh, and tenth grades).

West Virginia

No Internet documents have been found.

Wisconsin

Competition is alive and well in Wisconsin.

The Second Drafts of Wisconsin Academic Standards (http://badger.state.wi.us/agencies/dpi/standards/) are now on line in pdf format. You can download entire standards documents for each discipline (they range in size from 330k to 1.3 megs) or as smaller topical files. Files are available for:

- The Arts (there are separate files for dance, music, theatre, and visual arts)
- English Language Arts
- Family and Consumer Education

- Foreign Language
- Health Education
- Mathematics
- Physical Education
- Science
- Social Studies

In addition, the Department of Public Instruction has several other relevant documents:

- Applying the Academic Standards (HTTP://www.state.wi.us/agencies/dpi/standards/apply.html)-A statement that, in their application, standards cross disciplinary lines.
- Questions and Answers About Academic Standards (HTTP://www.state.wi.us/agencies/dpi/standards/qa.html)-Nine questions and answers about standards development and use in Wisconsin.
- Position Statement (HTTP://www.state.wi.us/agencies/dpi/oea/standards/mission.htm)-A defense of standards and the Wisconsin timetable for development and implementation.

The state of Wisconsin has a page called Connecting the Curriculum (http://www.state.wi.us/agencies/dpi/www/ctcover.html), which gives an overview of the CTC project which "aims at bridging the gap between national standards currently being developed in the five priority disciplines (English, history, geography, civics and the arts) and local school instructional programs by ensuring that all children will study challenging content within connected multidisciplinary K–12 state curriculums."

Meanwhile, Governor Tommy G. Thompson has offered his own Model Academic Standards (http://wisgov.state.wi.us/model.html) as an alternative to the voluntary ones coming from the Department of Public Instruction. The standards, contained in one long text document, present "performance statements" and standards for the primary, intermediate, and upper levels in the areas of:

- English Language Arts
- Mathematics
- Science
- Social Studies

Wyoming

No Internet documents have been found.

IV. Implementation and Assessment

IMPLEMENTATION

A Survey of State Standards-Setting Efforts

(http:www.mcrel.org/standards_benchmarks/survey.html)

This report is excerpted from *A Comprehensive Guide to Designing Standards-Based Districts, Schools, and Classrooms* by Robert J. Marzano and John S. Kendall. Note: Information in this report, except as otherwise indicated, was gathered via telephone interviews with state education department personnel and through analysis of documents made available by the states. This review was conducted from April through August, 1996. Every effort was made to verify the accuracy of the data.AFT: Y/N indicates whether or not, for the state indicated, "standards in all core subjects are clear and specific enough to lead to a common core curriculum" as determined in an annual report from the American Federation of Teachers (http://www.aft.org/)(Gandal, 1996). A blank in the column indicates those states (Iowa and Wyoming) that have elected not to develop standards.

This report provides data by state on issues such as: content organization; grade range; AFT criteria; degree of local control; timeline; and, current or completed work. The report is easy to access but space limitations precluded including it in this book.

The State Content and Student Performance Standards Setting Process

America's School: A Newsletter on Issues in School Reform-Spring 1996
(http://www.ed.gov/pubs/IASA/newsletters/standards/pt2.html)

The standards setting process typically includes the development of the following three components:

- **Academic content standards,** which reflect the ideas, skills, and knowledge in each discipline that are important enough for everyone to learn
- **Performance standards** (sometimes called indicators), which define "excellence" and how good is "good enough"
- **Proficiency levels,** which assign value to examples of student work expected at certain developmental levels

The experiences of state and local educators—including superintendents, curriculum directors, school administrators, and teachers—show that standards setting can accomplish three important goals. First, committing to high academic standards makes the unequivocal statement that all students are expected to excel academically. Second, standards setting engages parents and community members in a broad-based debate about what students should know and be able to do and strengthens the connections between state and local education reforms. Third, standards setting involves classroom teachers, parents and other members of the school community in the educational improvement process.

Participants in standards setting—whether classroom teachers, parents, or business leaders—report that the process inspires a sense of community ownership and an immediate classroom response: North Dakota teacher, Linda Corner, observed, "The standards make clear what we should be achieving at the end of each grade." A citizen member of Massachusetts' standards setting team, Clifton Reed, reports: "You have more teachers attuned to where you are trying to go and how it will cut across the various disciplines;" and Cynthia Bianco, Niagara City Public Schools assistant to the superintendent, explains, "We asked the community to tell us what they expected us to do for them. As a result of that process, everything we do is tied into a standard, or we shouldn't be doing it."

Chronology of Recent Standards Setting Activities

In March 1994, Congress passed the Goals 2000: Educate America Act, which provides funding to schools, communities, and states to raise their educational standards. In October 1994, President Clinton signed into law the Improving America's Schools Act (IASA), renewing the Elementary and Secondary Education Act of 1965 (ESEA) and providing the authority for a $10 billion appropriation in aid to states and localities. The new federal legislation is unique in its movement away from setting program-specific requirements and toward promoting the use of federal funds to support locally designed approaches to improving the quality of teaching and learning in schools. It helps bring all the pieces together in a systemic way to upgrade schools.

The Goals 2000: Educate America Act and the Improving America's Schools Acts of 1994 are adding momentum to state and local efforts to raise standards; however, in some states, standards have been central to education reform since the early 1980s. In 1987, California incorporated its standards in the state's comprehensive "curriculum frameworks," first in English/language arts and mathematics, and later in other disciplines. Maryland, Wisconsin, and South Carolina, among others, also developed content standards in the late 1980s. In 1989 other states began setting state standards in earnest, soon after the governors' "education summit" that laid the groundwork for the National Education Goals. Overall, between 1989 and 1992, 45 states began to articulate challenging standards and revise curricula in the core academic content areas.

It took several years for states to clarify workable strategies for standards setting, but a number of converging events added to the effort. The National Council on Education Standards and Testing assessed progress on standards setting in Raising Standards for American Education (1992). The Council argued that schools lacked coherence and that insufficiently ambitious standards weakened education across the country. Thus, following the model of states like California, Maryland, and South Carolina, the federal government assisted the process, funding standards setting by discipline-based professional associations and supplementing the standards-setting efforts of states.

In 1991, the National Science Foundation's (NSF) State Systemic Initiatives seeded math and science reforms in 25 states (including Puerto Rico). The U. S. Department of Education's Office of Educational Research and Improvement granted funds to 23 states in 1993 to promote standards development in English/language arts, history, geography, civics, foreign language, mathematics, science, and the arts. At about that time, the Department of Education's

Dwight D. Eisenhower National Program for Mathematics and Science Education also funded the development of curriculum frameworks in math, science, or both, in 15 states and the District of Columbia. Private foundations, such as MacArthur, Pew, and Carnegie, helped advance the process by convening standards setting groups in collaborative organizations, such as the Council of Chief State School Officers (CCSSO).

How Do States Set Standards?

Setting standards involves defining the "essential" aspects of each subject and, in coordination with broad-based community groups, writing a rigorous core of priority standards that speak directly to the concerns of teachers and parents. Once standards are drafted, groups involving educators and citizens statewide develop plans to disseminate, review, and implement them. Many states develop a monitoring strategy that tracks progress toward statewide adoption. Finally, to keep the purpose of standards in focus, states inform the public about the process and the definitions they use in developing standards.

Standards developers take especially seriously their responsibility to children who have been poorly served by schools; they include on their committees teachers and community leaders from disadvantaged, remote, or multilingual communities. They also turn to experts for guidance on the qualities of good standards. Organizations that states and districts consult include the American Federation of Teachers (1995), the Council on Basic Education (1995), CCSSO (Blank & Pechman, 1995), and the Association for Supervision and Curriculum Development (Curry, 1992). These groups, among others, argue that standards should be:

- Focused on academics
- Specific and challenging
- Grounded in core disciplines
- Reflective of broad consensus
- Balanced
- Accurate and sound
- Clear and useful
- Assessable
- Adaptable
- Developmentally appropriate

Redefining standards and attaining consensus are more easily envisioned than accomplished, and states sometimes are confronted by several thorny issues along the way. A first step requires agreeing on what a content standard is. Content standards take on different meanings across contexts and content areas. Thus, in mathematics, following NCTM's Curriculum and Evaluation Standards, many states use common high-level conceptual statements coupled with well-defined content specifications. But in English or language arts, where no discipline-based standards are yet available, states have made different decisions about the broad themes of content that should be taught in reading, writing, listening, speaking, and English literature.

Some Questions Writing Teams Ask about Their Standards

- Is it clear from the standard what students are expected to know and do in the core academic content areas?
- Does the community—including teachers, parents, and citizens—claim the standards as its own?
- Will teachers view the standards as a tool to help focus teaching and learning?
- Can students understand what will be expected of the at key points in their school careers?
- Do parents know how they can help their children and their schools?
- Is it clear to teachers where the resources are that will help them teach to the standards?
- How will student progress toward achieving the standards be measured?

Standards setters also need to resolve varied ideas about performance standards and determine which performance proficiencies are appropriate in core subjects at different developmental levels. Performance standards gauge the degree to which students meet content standards; therefore, a number of elements must be considered in setting the standard: what qualifies as evidence that a standard is met; the means of assessing performance; and distinctions among proficiency levels. Grappling with these issues has put performance standards in the middle of the process, between obtaining agreement on content and determining the kinds of assessments that will best test students' achievement of the state's content standards.

Colorado Has Drawn A Distinction Between What Standards Do And Don't Do:

Colorado's standards DO:

- Reflect agreement among community members about the knowledge and skills students must have to graduate
- Hold each student to high performance standards in math, science, reading, writing, geography, history, and other subjects
- Build on best past and current practices
- Provide realistic expectations and appropriate learning opportunities for all students

Colorado's standards DO Not:

- Promote arbitrary classes, isolated curriculum, or "seat time" spent in school
- Include fuzzy, unfocused minimum expectations or a watered-down curriculum
- Throw away graduation requirements and traditional grades, classes, or report cards
- Set unrealistic standards that prevent all students from succeeding

Colorado Department of Education. Higher Expectations, Better Results

Standards Build on Consensus

Consensus is the key to successful standards setting. Clarence Bina, North Dakota's director of special projects, reports that his state convened a cross section of stakeholders, including teachers, administrators, and representatives from several Native American reservations and religious communities. Working with the assistance of a consultant from the Mid-Continent Regional Educational Laboratory (http://www.mcrel.org/), the team struggled with such issues as: What should a standard look like? How demanding should the performance benchmarks be? The process reinforced state and local ownership and commitment. The writing team agreed that the document needed to provide direction to teachers and clarity for parents. Once the team completed the writing process, teachers from eight pilot schools began to lead inservice training sessions on the standards in schools throughout the state. A North Dakota teacher trainer says that these standards greatly improve on "the multiple goals that overwhelmed teachers before . . . we now understand exactly what we need to teach the kids."

Across states, writing teams of professional educators and citizens debate and refine numerous drafts before they finalize their standards. In Massachusetts, 25-person teams in seven core content areas are writing curriculum frameworks that include content standards. The teams involve teachers, school and district administrators, college faculty, parents, business representatives, representatives from museums and cultural organizations, and high school students. In North Dakota, the first draft of the standards was written by teachers and university professionals. Colorado's draft standards were the product of discipline-based committees working under the direction of a state-appointed standards council.

The review and pilot process, which typically lasts from two to four years, makes standards setting a shared, highly public, and statewide event. Writing partnerships, community hearings, and school study groups are central to implementation in many states.

Example Of North Dakota's English/Language Arts Content Standards For Grade 8

Students gather and organize information effectively through reading, writing, listening, and speaking. They achieve the benchmarks if they:

- Accurately summarize story elements, e.g., summarizing, main character, supporting characters, mood, etc.
- Use content clues to determine meaning, e.g., denotation, connotation, standard/nonstandard English, etc.
- Use a variety of organizational strategies, e.g., cause/effect patterns, time lines, outline forms, paraphrasing, note-taking, etc.
- Use appropriate reference tools, e.g., dictionaries, CD ROMs, graphic aids, laser discs, Reader's Guide, Dewey Decimal System
- Use an appropriate reading and listening vocabulary, including word clusters, multiple meanings, etc.

Standards-Setting Requirements for Title I of the New ESEA

Part A of Title I of the new ESEA is designed to improve the teaching and learning of children in high-poverty schools, enabling them to meet their state's challenging academic content and performance standards. States that receive Title I funds must submit a plan developed in consultation with local education agencies, teachers, administrators, staff, and parents. State plans must demonstrate that the state has developed or adopted challenging content and performance standards for all students—including students with limited English proficiency, disabilities, or who are economically disadvantaged—or describe the state's strategy and a schedule for developing or adopting such standards by the beginning of the 1997–98 school year. States that have already developed or are developing content and student performance standards under Title III of the Goals 2000: Educate America Act, or another process, must use those standards (modified if necessary, to conform to Title I requirements) for Title I.

If a state will not have developed or adopted content and student performance standards for all children by the beginning of the 1997–98 school year, or if it does not intend to develop them, it must develop content and performance standards for children participating in Title I, Part A, programs. The state determines the subject areas, which must include at least mathematics and reading/language arts. For subjects in which students will be served under Part A but for which a state has no standards, the state plan must describe strategies for ensuring that all participating students are taught the same knowledge and skills and held to the same expectations as are all children. By the beginning of the 1997–98 school year, the states must either develop these Title I standards or adopt a set of standards, such as those developed by another state. States, however, are not required to submit their standards to the Secretary of Education.

Challenging content standards must:

- Specify what children are expected to know and be able to do
- Contain coherent and rigorous content
- Encourage the teaching of advanced skills

Challenging performance standards must:

- Be aligned with the state's content standards
- Describe two levels of high performance, proficient and advanced, that determine children's mastery of material in the state content standards
- Describe a third level of performance, partially proficient, to provide information about the progress of lower-performing children toward achieving proficient and advanced performance levels

Title I schools and districts must demonstrate the extent to which they are making adequate yearly progress toward enabling their students to meet the state's performance standards. State plans define what constitutes "adequate yearly progress" for schools and districts. Progress is linked primarily to student performance on state-defined assessments. Schools and districts that fail to make adequate progress will be identified for improvement and will receive technical assistance.

Standards Are Context Specific

State standards are specific to state-defined needs and contexts. Michigan will include economics in its social studies standards, and Montana has standards for "aesthetic literacy" that encompass English and the fine arts. Alaska, Oregon, Vermont, and Wisconsin are developing multidisciplinary standards. Through support from the U.S. Department of Education's Eisenhower Program in Mathematics and Science, many of the states developing curriculum frameworks include cross-disciplinary math and science standards. One state and one district—New York and the District of Columbia—incorporate technology and mathematics with science standards; Massachusetts includes technology with science standards.

Often states start setting standards in English/language arts or mathematics, or both, and, by the year 2000, most intend to complete standards setting in various combinations of academic fields, such as history, geography, civics, economics, foreign languages, and the arts. In the past few years standards setting in math or science was especially active because of groundwork laid by the NCTM (http://www.nctm.org/), AAAS (http://www.aaas.org/), NSTA (http://www.nsta.org/), and NAS (http://www.nas.edu/), and because of federal assistance from NSF and the U.S. Department of Education.

A CCSSO study found that math and science state curriculum frameworks and standards written since 1990 have several common features. They include commitments to teaching and learning based on problem solving; developing mathematical power among all students by upgrading the curriculum content with statistics, algebra, geometry, and measurement; and using calculators and computers to apply mathematics to real-world problems. The curriculum frameworks identify the audiences for the document and the purposes of the standards. Often, the content standards incorporated in the frameworks are consistent with the standards distributed by the discipline-based professional organizations in these fields, but the scope and structure of each state and local document varies. A quarter of the standards written since 1990 include pedagogical guidance; just over half also make policy recommendations. Virtually all of the standards espouse a strong equity agenda.

Standards setting also occurs under different kinds of state mandates. Colorado, Michigan, and Massachusetts, for example, are implementing legislated accountability requirements. In North Carolina, the Governor's office is spearheading standards setting. The English/language arts standards in North Dakota and Montana were developed by the curriculum divisions of the states' education departments.

Sometimes, in lieu of mandates, states embed model standards within guides they write for districts to use in developing their local standards and curriculum frameworks. Colorado and Massachusetts are two examples of this approach. The commitment to local control in education in the United States means that standards are locally determined, although some states have the legislative authority to mandate statewide standards.

Example Of Massachusetts' Mathematics Content Standards or Grades 5–8

The mathematics curriculum should include the study of number systems and number theory so that students can:

- Understand and appreciate the need for numbers beyond the whole numbers;
- Develop and use order relations for whole numbers, fractions, decimals, integers, and rational numbers;
- Extend their understanding of whole number operations to fractions, decimals, integers, and rational numbers
- Understand how the basic arithmetic operations are related to one another;
- Develop and apply number theory concepts (e.g., primes, factors, and multiples) in real-world and mathematical problem situations.

Standards Promote a Culture of Professionalism

State leaders anticipate that raising education standards will promote a dialogue among educators, parents, and the public that redefines what should be taught and how to teach it; however, a solid professional development initiative is central to achieving that vision.

Massachusetts and North Dakota, while taking different approaches, have a similar objective: "Not just to produce thought-provoking documents, but to do it in such a way that teachers have a part in the development and a stake in its implementation," according to Massachusetts' Dan French.

Both of these states ask teachers to disseminate the standards among their colleagues. In Massachusetts, trained study-group conveners are helping district-based groups select a theme from the standards and design and test new instructional materials. Through books, videotapes, and computer-based data banks, the state will disseminate the groups' products to demonstrate ways to engage students in higher levels of thinking and more active learning. North Dakota turned to its teachers to pilot staff development activities that use the standards to design performance-based tasks and projects, along with rubrics for assessing student progress. Schools applied to serve as pilot programs; in two-week planning meetings with educators across the state, teacher leaders, and their principals hammered out a training program to teach colleagues how to apply the standards to performance assessments and benchmark-development.

Teachers are the key to achieving challenging standards, and the experiences of those teachers involved in the early stages of this process show the significant impact that new standards can have. Standards authors report that even the drafting process has an immediate effect. The North Dakota Language Arts Committee introduced its standards with this comment about its members' own experiences: "Thus far, the impact of the project is best evidenced by the increased level of knowledge and understanding of standards for the English Language Arts Committee itself."

Standards Setters Confront Challenges

State standards setting has gathered momentum, but the process still faces challenges. Time and expertise are always limited, creating potential stumbling blocks. Early standards-setting states found it takes three to five years for standards setting to move from state legislation to dissemination. At the end of that period, standards exist but assessments, implementation activities, and professional development are just being planned.

Teachers report that standards send clear signals. But turning standards to practice is another significant challenge. The experiences with the California curriculum frameworks and the NCTM Curriculum and Evaluation Standards teach that the implementation timeline is lengthy. Although these standards have been widely distributed, researchers are debating how quickly classroom practice is changing to reflect their recommendations (Guthrie, 1991).

Finally, sustained professional involvement is crucial to the success of standards. Once teachers are engaged and asking fundamental questions about what to teach and how to teach it—and are encouraged to do so by their schools—they likely will make this reform a lasting one. In addition, standards writers insist that improved student performance is the goal—not standards alone. Standards setting is a critical first step from which school improvement can flow.

Massachusetts invested more than $2 million to support 1,100 school-based study groups that will encourage teachers to talk about the whole notion of whether they can have one common set of high expectations for students. The state's director of instructional and curriculum services, Dan French, explains: "We tell people that [standards are] a good place to start. Having that conversation is key. . . . In our mind, a good school is where there is dialogue and inquiry. The study group sanctions the conversation; it says that the state agency thinks it is important to bring teachers together and begin to talk about their craft."

Executive Summary: Assumptions of Standards-Based Reform and Their Implications for Policy and Practice

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(http://www.rdc.udel.edu/ASSUMPTIONS_EXEC.HTML)

Summary

The concept of standards-based educational reform carries with it many assumptions about teaching, learning, professional development, administration, and governance. Unfortunately, in the interest of producing quick results, some states have focused their efforts almost entirely on establishing standards and the attendant assessment and accountability mechanisms, rolling them out in the name of "systemic" reform.

Making explicit some of the important implied assumptions about standards-based reform is one way to ensure that all sectors-not the least of whom are students-that have a stake in a systemic transformation are accounted for and listened to. This paper examines seven of those assumptions (framed here as propositions) and explores their implications for a truly comprehensive educational reform effort-the only kind that has any real chance of success.

The assumptions explored include the following:

- Standards-based reform requires that considerations of what students should know and be able and disposed to do should be placed at the center of reform efforts.
- Standards-based reform makes public the goals, expectations, and aspirations for individuals and the system, and it provides a focus for their efforts that will improve the effectiveness of the system.
- The articulation and widespread dissemination of standards will provide adequate guidance to ensure the transformation of teaching and learning.
- Standards-based reform will re-couple effort and accomplishment.
- Standards-based reform permits an appropriate balance in who defines the educational experiences of students.
- Standards-based reform requires and promotes a necessary climate of trust among various constituents within the educational system.
- Standards-based reform will enable a more appropriate and equitable allocation of funding and resources according to desired outcomes and needs.

The authors examine each of these propositions in detail, suggesting the conditions and actions that will bring them about to guarantee a successful reform effort. Moreover, each of these assumptions generates yet another set of questions related to implementing and assessing a systemic reform program.

The Delaware Perspective

Many components of Delaware's five-year systemic reform initiative-New Directions-reflect the assumptions defined and discussed in this article. At the core of New Directions is the belief that higher standards for teaching and learning will yield citizens who are better prepared to cope with the ever increasing complexity of today's-and tomorrow's-world.

Specifically, four 45-member Curriculum Frameworks Commissions have written or are in the final stages of writing Delaware standards in mathematics, science, English language arts, and social studies. Commissions on world languages, arts, and vocational education are in the early design stages.

Because Delaware's reform initiative is systemic in scope, its expectations extend across the panorama of educational stakeholders-students, teachers, administrators, parents, business, and government. Reflective of the authors' Assumption 1, Delaware's standards are designed to put expectations for the student at the center of the reform, and there are signs that this priority is at least being acknowledged-if not yet universally embraced-by the educational community. Standards as an expression of the state's aspirations for students have begun to permeate the conversations about teaching and learning among educators and between educators and the public. Although these conversations are sometimes contentious, there is increasing recognition that the dialogue itself is a necessary first step in the reform process. Student-centered standards require attendant shifts in instructional strategy and techniques, and there are several efforts under way in Delaware that speak to this issue: a coalition of statewide education organizations engaged in developing a capacity-building plan for the state; the 301 Projects in all content areas; Re:Learning; Project 21 (Delaware's National Science Foundation Statewide Systemic Initiative); as well as several teacher enhancement projects offered at the district, state, and university levels. These programs offer teachers opportunities to design, discuss, and field test new teaching strategies that reflect the kind of instruction that will help students meet the new standards.

Through open meetings of the curriculum commissions, public presentations by state school personnel, newsletters, and public disclosure of interim assessment results, attempts are clearly evident in Delaware that meet the spirit of the authors' view that standards-based reform efforts make public the goals, expectations, and aspirations for individuals and the system (Assumption 2). The science and mathematics commissions have sent drafts of the proposed standards to every teacher in the state for review and comment. Public hearings on these standards are planned as well. Nonetheless, as the standards move closer to becoming official state policy, there are still participants in all sectors of the educational system who have shown little or no interest or involvement in New Directions. A recent statewide poll found that only 20 percent of Delawareans had heard of New Directions. Clearly, more needs to be done to increase awareness of and involvement in the reform effort. Acknowledging the importance of public perception and access to information, the State Board of Education has enlisted a communications consulting firm to intensify efforts in this area.

As mentioned above, several programs in Delaware are attempting to assist in the transition to a new standards-based teaching environment. Simply promulgating the standards will not transform teaching and learning (Assumption 3). Delaware has put many supports in place to help guide in the transformation, perhaps more than any other state engaged in similar reform efforts. The educational establishment in Delaware appears to recognize the necessity for capacity-building and professional development as essential ingredients to actually making the standards work once they are published. A capacity-building plan will be presented to the next session of the General Assembly, and a key question is whether the state will understand what is needed and be willing to provide the resources necessary to underwrite the kind of professional development that extensive systemic reform demands.

Although there is an awareness in Delaware of the need, there does not appear to be widespread understanding of the multi-faceted nature of truly high-quality professional development experiences. At a minimum, this must encompass the following areas:

- discipline-based knowledge and content
- effective subject-specific pedagogical skill
- a collaborative effort involving teams of teachers
- active experiential process (learning by doing)
- activities that are tied to challenging state content and performance standards
- a sustained focus as opposed to a one-time experience
- involving teachers in design, planning, and delivery
- providing opportunities for teachers to reflect on their practice

Currently, no professional development activities in Delaware incorporate all of the above criteria; however, that should be the goal.

In attempting to design mechanisms that recognize and link effort and accomplishment (Assumption 4), New Directions recognizes the need for an extensive assessment and accountability system for both students and educators, and Delaware educators are designing a comprehensive assessment system for the new standards. Already, interim assessments have been administered in reading, writing, and mathematics. However, full alignment of standards and assessment is planned for the Comprehensive Assessment System (CAS) of the future. Any misalignment only distracts and diminishes the educational process. Development of the CAS must proceed with all due haste. Development work in the area of teacher and administrator accountability has been slower in coming, although the New Directions philosophy appears to favor placing accountability at the school level first and foremost.

The challenge of individual accountability design is to find a way to measure progress in terms of accomplishment as it relates to the standards, not to the passage of time. Of course, the major "real-life" implication of this problem is how to structure schooling and credentials (diplomas) around the idea of accomplishment rather than credit hours. This is one of the more dramatic implications of standards-based reform, and it is one that Delaware (or any other state) has not fully addressed. Another concern is to find ways to provide truly energizing educational experiences for those who do well and succeed early. Delaware has not done much work in this area. Interesting-and somewhat ironic-is the potential of having larger groups of students succeed (success is the goal of higher standards, after all), only to face limited opportunities for more challenges and growth. Most attention in the past has been centered around those who don't succeed, and though they will still be the major focus, the fact remains that neglecting those who do well is a surefire way of working against the notion of recoupling effort and accomplishment.

Institutional accountability is also essential, and the recent statewide poll indicates that there is a high level of public endorsement for professional accountability. However, in order to truly motivate in ways that will serve the reform effort, the accountability system must be built on a foundation of hope rather than punishment. Another major challenge facing Delaware's reform effort is the need to construct a system of accountability that is more concerned about assessing conditions and their improvement than determining failure and assigning blame.

A growing body of evidence suggests that bonafide decentralization of control cannot be achieved by decree. To succeed in redefining governance in this way, Delaware will need to clarify the roles of those involved and help them to learn the skills required to function successfully in a decentralized environment. In its effort to extend local ownership and to encourage more decentralized control of reform (Assumption 5), the state has been careful to distinguish standards development from curriculum development. The goal of New Directions is to establish the standards and provide help to local education units in devising ways to achieve them. The actual curriculum used to meet the standards is viewed as a district-level responsibility and reflects one aspect of the article's assumption that standards-based reform permits an appropriate balance in who defines the educational experiences of students. However, the full implication of this assumption extends into the regulatory arena as well. A single edict pronouncing decentralization means nothing if there are a thousand regulations that make it impossible. Delaware needs to consider regulation only for a few essential areas: 1) the health and safety of children and adults in the educational system; 2) civil rights; and 3) basic fiscal responsibility (e.g. clear regulations defining criminal acts and malfeasance).

The authors argue in Assumption 6 that standards-based reform requires and promotes a necessary climate of trust among various constituents within the educational system. This approach, in fact, shifts the controlling mechanisms of education (e.g. structure, regulation) from the system to the individuals in the system. This type of control, however, is unwise until and unless the people within the system are trustworthy; that is, until they have the skills and capacity to succeed. This transformation of organizational attitude is not easy, nor does it happen quickly. It is not surprising that no formal plan to institutionalize this kind of organizational philosophy in Delaware has surfaced thus far.

It should be noted, however, that Delaware's strategy in virtually every area of the reform design has been inclusive rather than exclusive, a first step in developing trusting relationships between educational partners. One example that underscores the spirit of this assumption is the makeup of Delaware's Standards Commissions, as well as assessment design and capacity-building teams, which include good mixes of teachers, district administrators, and state education representatives. The same holds true for the New Directions Development Site teams and other professional improvement efforts that feature collaboration between teachers and administrators. These are just first steps, however. As has been learned in business and industry, formal organizational development plans are needed for all elements of the system.

Assumption 7 suggests that standards-based reform should measure equity in terms of equality of accomplishment of all children. If accomplishment by all is truly the goal, then Delaware eventually may need to rethink its current resource allocation policies to provide ways that support this commitment. For example, if children in a school are failing, and the reason can be clearly linked to a lack of resources, then it is appropriate that additional funds be directed to that area to put it back on track. However, if the reason for failure is not financial, then it is foolish-even irresponsible-to allocate more money while ignoring the real source of the problem. Appropriate remedies for specific problems wherever they exist throughout the system will best ensure the kind of equity that enables all children to succeed. No specific plan has yet emerged in Delaware that measures equity in terms of outcomes rather than formulaic resource allocation. However, some movement in the equity area is evident. Interim assessment results are being closely monitored through equity-related lenses such as performance breakouts by race and gender. Also, much of the work of the New Directions National Advisory Commission has focused on equity questions. The motto of the New Directions effort is "excellence and equity for all," and it is clear that this issue is one that must be confronted.

State Education Agencies: Partners in Reform

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(http://www.rde.udel.edu/sea.html)

Summary

Successful systemic reform initiatives will inevitably require state education agencies (SEAs) that are willing and able to redefine and restructure themselves. If SEAs continue to function as monolithic, compliance-focused organizations, they run the risk of subverting the systemic change they purport to encourage.

In this paper, roles for state education agencies are examined in three important areas: 1) leadership; 2) regulation; and 3) facilitation.

Leadership. As in emerging corporate management practice, the SEA must establish, facilitate, and maintain goals, standards, and expectations. However, this vision must be arrived at through collaboration with a broad cross-section of the constituents of the education system. Participation from the beginning by the public and professionals involved in education at all levels increases the chances of success through informed support and a sense of ownership. In a related role, SEAs must establish and maintain political support for public education and reform initiatives by informing and consulting with policy makers at both the local and state levels. Likewise, inter-agency collaboration in order to enhance support for child and family services is important, as is responsible stewardship of publicly funded programs.

Another important aspect of SEA leadership involves keeping its own house in order by serving as a model of organizational transformation and renewal. It must restructure its mission to one primarily of service, not inspection and compliance. It must recognize individual needs of diverse districts. Through a shared sense of mission, SEAs should create teams focused first and foremost on helping children to succeed. These teams will have specific workscopes. Once their task is completed, the team's resources should be directed toward other challenges. The SEA, through respect of quality work and the people who do it, encourages professionalism and a sense of commitment. Employees receive frequent feedback, are asked to assess themselves, and participate in the assessment of their peers and the organization. Finally, to support its new service-oriented approach, the restructured SEA routinely gathers and uses information for planning and decentralizes decision making in order to solve problems quickly and effectively.

Regulation. The state education agency has a regulatory role to play, but it is far from the anachronistic enforcement organization that many SEAs have become. In fact, the only appropriate regulatory responsibility of an SEA involves the most basic protections: civil rights, health and safety, as well as fiscal responsibility. SEAs must be careful not to slip into old habits of trying to shape programs or determine practice in schools. The state can make clear its expectations for students and professionals through standards, but implementation and specific program content is best determined at the local level where needs, contexts, and circumstances are best understood and accommodated.

Facilitation. Many of the suggestions in this paper derive from a clear sense of place for each element in a reformed system. Nonetheless, there is a need to create the conditions

that make success possible; conditions that cannot be achieved through legislation or regulation. In this regard, the SEA must also fulfill a facilitative role. Responsibilities in this area encompass several elements:

- Capacity Building—Not to be confused with professional development, capacity building suggests a larger sphere including communication capacities, reflective capacities (research/evaluation), the organization and use of time, collaborative problem solving, meeting design and facilitation, conflict resolution and positive approaches to negotiation, as well as organizational analysis and development.
- Professional Development—The belief that dissemination of standards can lead to changes in practice mistakenly assumes that new standards and assessments can illustrate practices well enough to dramatically change the teaching in our schools. In fact, much more is needed. Engaging teachers in the development of exemplary practices that reflect the standards goes a long way toward coupling statewide performance and assessment goals with locally constructed, individualized instructional strategies. These exemplars need to be strategically used in a professional development program in order to bring the standards to life for practitioners.
- Public Accountability—First, a distinction should be established between accounting and accountability. Accounting refers to gathering, organizing, and making available for use information that describes the performance of the system. Accountability places that information within a system of use-including planning and action. Accountability should be actively approached and involve many constituencies. It should develop understandings about the system's performance, strategies for improving performance, and responsibilities for those involved. This approach avoids traditional indicators that do little more than pronounce winners and losers. In order to work, however, this type of accountability requires accounting processes that support involvement and communication among various stakeholders. It requires full information systems that support conversations about performance. These systems must be fair and understandable in order to involve the public in discussions about education. Only after the approach to public accounting has been shifted-and various constituencies understand and are involved in the process-is it reasonable to tie the discussions to judgments about people, schools, and districts within the system.
- Reflective Capacity—The SEA must support the development of a reflective capacity within the education profession. On an individual level, it can promote teacher-led inquiry, action research, and reflection on practice. Extending the concept of learning organizations into schools and districts as communities of learners requires new ways of gathering and using data to inform decision making.

Ultimate success in systemic reform may rest with the SEA's ability to blur traditional institutional boundaries and responsibilities in pursuit of a more shared sense of purpose. This may mean, on an individual level, that some professionals will have roles in more than one area of the system. It may also mean that some organizational entities will have multiple responsibilities across the system.

The final challenge of the SEA is to balance the need for patience and persistence with accomplishment and progress. The SEA must establish the markers-in part through negotiations with the public-that delineate meaningful progress while still allowing the reform effort adequate time to effect a larger transformation.

A Delaware Perspective

This paper contends that SEAs must have the capacity to redefine themselves if reform initiatives are to be systemically successful. Because Delaware is currently involved in an extensive statewide education reform effort, New Directions, it is quite reasonable to ask how Delaware's SEA-the Department of Public Instruction (DPI)-measures up to the criteria outlined here.

Organization. DPI serves as the staff of the State Board of Education, which is ultimately responsible for establishing state education policy in Delaware. DPI is headed by the State Superintendent of Schools, who reports directly to the State Board and the Governor.

In addition to the Superintendent's Office, DPI is organized into four main branches: Administrative Services, Standards and Curriculum, Assessments and Accountability, and Improvement and Assistance, each headed by an associate or assistant state superintendent. Each of the branches is further organized into teams, headed by "team leaders," that deal with specific elements of the work of the Department. As an example, the Improvement and Assistance Branch includes teams on Equity and Special Programs, Exceptional Children, Vocational Education, and Student/Family/School Support Services.

Reform. The state's current standards-based reform initiative, New Directions, was officially launched in FY1993 and integrates ten national and statewide education goals into a five-year agenda that sets new, high standards of achievement for Delaware's public school students, as well as new ways to assess achievement. Standards were (and are) developed by broadly representative commissions that include members from virtually every sector of the education stakeholder community as well as the citizenry.

Does DPI have the capacity to redefine and restructure itself along the lines suggested in this paper in a way sufficient to secure the success of New Directions? Will New Directions succeed on the scale its proponents envision? Where does DPI stand in relation to the pieces of the SEA model defined by the authors? These questions are examined below in reference to the criteria set forth by the authors.

Leadership. One of the first actions taken by of the current state superintendent after his appointment in 1992 was to organize DPI into the current team structure, which is reflective of the collaborative approach described in the paper. Leadership training for top DPI personnel and the subsequent development of an organizational plan provided a key step toward institutionalizing a team structure within the SEA. However, training cannot stop at the top; it must extend to team leaders and beyond them to everyone else in the organization if the team approach is to become fully operational. It must be recognized that teaming structure as an organizational device suggests that the focus of teams be squarely on work to be done-products to deliver-rather than upon functions to be maintained. These challenges have not been fully embraced by DPI in its reorganization, leaving the changes somewhat more a shift in nomenclature than fundamental organizational or operational change. Also important to the success of team management is not allowing critical positions to remain unfilled for long periods of time. Overall, through its organizational restructuring, DPI is attempting to change. Whether it will become a model for organizational transformation for the rest of the educational system will depend in part on how it deals will some of the difficulties mentioned above. A final challenge to organizational transformation within DPI is the degree and type of control exercised by the State Legislature and even the State Board of Education. Currently, for example, DPI cannot even revise its organizational arrangements without legislative approval. Such a circumstance represents an undue measure of administrative and operational control and is inconsistent with the philosophies of distributed authority and democratic localism espoused in the legislature and elsewhere.

DPI has perhaps not fared as well in the areas of broad-constituency formation and interagency collaboration. Although DPI received (and has publicized) an initial endorsement for New Directions from all nineteen local Delaware school districts-backed up by a $5 per student district contribution-many observers in the state remain unconvinced that district support (especially from some local school boards) is as extensive or enthusiastic, as deep or as grounded in understanding as DPI might suggest. The relationship between DPI staff and local district staffs-occasionally stormy-needs to be improved in order to build the kind of trust necessary to facilitate collaborative work that serves the reform effort. Moreover, the kind of "enrollment" necessary to succeed in the reform effort requires deep understanding-more so than mere public relations accomplishment only can provide. DPI needs to consider other forms of engagement and enrollment, forms that augment the persuasive approaches of public relations and political debate. These might include retreats for political leadership and facilitated public dialog.

Regulation. Delaware differs from many states in that its regulatory role does not extend to the curriculum. In fact, New Directions flatly rejects state-mandated curricula, instead insisting that local districts oversee that function. On the other hand, Delaware differs from many states also in the way it funds education. The state provides two-thirds of the money for public education, all of which comes from the General Fund through no specific tax. This politically volatile state share is tightly controlled, regulated, and dispensed through a complex funding formula overseen by DPI. Even funds raised by local districts through property taxes are held in state-administered accounts. And, although they work for local districts, Delaware public school teachers are, in fact, classified as state employees. It will not be easy for the state, through DPI, to relax control over spending in the interest of more local responsibility given this oversight condition, and resist natural urges to use it to influence (if not control) local policy and practice. Home rule with taxation authority and budgetary control is the only relief from this dilemma. Ironically, in spearheading the establishment of statewide standards, rejecting state-mandated curricula, and simultaneously retaining budget control, DPI may well be put in the uncomfortable position of trying to philosophically defend site-based management while denying local entities the fiscal control they need to implement it.

It must also be noted that both the fiscal arrangements cited here and longstanding convention and practice have given the State Board standing in local affairs not seen in many other states. Establishment of school calendars, management of interscholastic athletics, and student discipline are just a few areas that will have to be addressed if the SEA is to achieve the circumstance of attending only to civil rights, human safety, and fiscal responsibility as the sole foci of regulation.

Facilitation. Delaware's DPI is making some very positive moves to help facilitate many of the changes it advocates in New Directions. The state shows a growing understanding of the importance of capacity-building and professional development at the school and district levels, underscoring it with increased funding for professional development. The creation of the Delaware Education Research & Development Center-funded collaboratively by the Delaware Business/Public Education Council and the University of Delaware-acknowledges the importance of a research and evaluation capacity, one that can monitor and measure the effectiveness of the reform effort. The establishment of the

Center for School Change at Delaware State University also recognizes the importance of professional development and capacity building. Other avenues for capacity-building are gaining increased attention and responsibility. These include the Delaware Teachers' Center, the Principals' Academies, etc. The challenge now is to integrate and coordinate these resources. To date they have not been defined in ways that maximize their contribution to and impact upon reform efforts throughout the state. On the other hand, widespread impact may simply be a time issue. What is apparent, however, is that Delaware is seeing the beginnings of learner communities; it is a base that must be coordinated, deepened, and expanded upon.

Accountability. DPI for years has kept voluminous data about test results, student demographic data, and other statistical matters. Other agencies within the state keep important related data as well. What is missing is a coherent, comprehensive statewide data system that not only brings all of this information together, but makes it easily accessible, understandable, and valuable to teachers and local administrators as well as other educational and political leaders and the general public as they make day-to-day and long-range decisions. Again, the Delaware Education Research and Development Center is attempting to build just such a system as part of its mission. This type of data structure and accessibility is important to informing the reform effort and building the research, analysis, and shared decision-making bridges between the state and districts.

As for methods of public accountability, too often in the past this has simply taken the form of statistical comparison (what these authors label "accounting"). For many years, DPI has released annual school-by-school, district-by-district assessment results that are published in the state's newspapers with great fanfare. SAT and other national assessment scores receive similar treatment. Although interesting and perhaps informative at a basic level, significant questions remain about the contribution this information makes to deepening understanding and improving education in Delaware. A bona fide accountability system would have certain attributes:

1. Elements of the system would interact directly with those constituents to whom they are responsible (e.g., teachers to students and parents; schools to their communities; districts to their regions; etc.).
2. The evidentiary basis (the data) for accountability must be comprehensive (inclusive of all outcomes as well as context, antecedents, and educational processes), not singular or episodic as is currently the case.
3. The evidence used to support accountability would be intuitively meaningful to all those whom we would seek to involve in the accountability; and
4. It would be an interactive process designed to promote deep understandings of the performance of the system (e.g., How is it performing? What are the conditions of its operation? Why does it perform as it does? What are its needs and priorities? How are those needs best addressed? What are the consequences of action taken?). This is contrary to current practice which seeks only to determine success or failure and assign responsibility for it.

There is much more thinking along these lines in Delaware, notably in draft proposals from the Governor's Educational Improvement Commission. However, building accountability mechanisms of this sort will require four conditions:

1. Greater effort on the part of those in the educational system to gather, organize, and make available the kind of data that are necessary to support the kinds of events at which this accountability can be pursued.
2. Greater effort on the part of citizenry to engage in those events.
3. Courage and commitment on the part of the educational system to expose itself more completely to public scrutiny.
4. Courage and commitment on the part of the public to permit a form of accountability that is very new and different, but is also a form of accountability that is a fairer and more critically honest examination of performance.

Reflective capacity. As in virtually every other state, Delaware's SEA has not yet systemically addressed this issue. Often, professionals cite the need for individual research and renewal, but point to a lack of time as the principal impediment. Likewise, a reflective capacity is often viewed by SEAs as a back-burner issue when compared to other professional development needs. Though some attempts have been undertaken-again notably by Project 21-to build teacher awareness and provide time-management techniques, the state is still a long way from institutionalizing a reflective capacity for its professionals. DPI engaged in an exercise of data gathering and reflection on its performance. This led to the initiation of an organizational development plan. As of this writing there has been only limited follow-through on that plan and no attention to ongoing data gathering and use. Progress in this area on the part of DPI, districts, and schools is greatly needed.

Building support. Finally, Delaware is just now beginning to share the New Directions vision on a statewide scale through informational newspaper supplements and television programs. The state is now faced with attempting to build public support for New Directions in a climate of taxpayer recalcitrance and loud anti-government rhetoric on the parts of some constituencies. Some legislators have already publicly identified themselves as New Directions "opponents," even though not all of the standards have yet been drafted, released, or approved. It will be interesting to see how Delaware meets the authors' challenge to the SEAs to help build a public tolerance for balance between patience and persistence and accomplishment and progress. DPI, realizing the need for good public relations and communications, has enlisted the help of outside consultants to help build public understanding and support. Business and corporate support has been strong from the beginning. The irony is that if the present political atmosphere lingers, it may difficult for the state to encourage "patience and persistence" or "accomplishment and progress" if there is no solid public support for either. What must be done is to redefine this enrollment and commitment building activity from a persuasive exercise to a collaborative, mutually respectful activity. Many of the "opponents" have much that deserves to be heard and accommodated; many others become opponents precisely because they do not feel heard or respected. New techniques of public facilitated dialog need to augment the traditional public relations and informational strategies currently being pursued.

In the end, Delaware finds itself in a position similar to other states attempting major reform efforts. Controversy about state control of academic and economic functions is certainly not peculiar to Delaware, though the SEA-district relationships may be more sharp-edged because of the state's small size, politics, funding arrangements as well as established practices. The key is collaboration. Both the SEA and the districts will need to continue to work together to redefine their roles and responsibilities if meaningful systemic reform is to become a reality in Delaware.

Developing Content Standards: Creating a Process for Change

(http://www.ed.gov/pubs/CPRE/rb10stan.html)

Center for Policy Research in Education?

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Education leaders at every level of the system are developing standards to specify what students should know and be able to do in key subject areas. Local and state groups, professional organizations, and consortia of states and districts are constructing standards.

The current movement to develop challenging, ambitious expectations for student learning can be traced to the pathbreaking efforts of the National Council of Teachers of Mathematics (NCTM) and states like California in the mid-1980s. Now, 45 states are planning, developing, or implementing new curriculum frameworks (Pechman and LaGuarda 1993). Nearly every major subject-matter association is engaged in the process of defining standards. National projects, like the National Board for Professional Teaching Standards and the New Standards Project, see the development of standards as a key element of their missions. And Congress is considering proposals to extend standards-based reform to federal programs.

Defining leading-edge, "world class" standards is viewed by many as a critical component of coherent, systemic reform. But the form and purposes of specific standards are diverse. Many states plan to use standards as anchors for other state policies, including policies about curriculum materials, teacher professional development, and student assessment. Some are elaborating upon general standards in more detailed curriculum framework documents; others are using the terms "standards" and "curriculum frameworks" interchangeably and producing one set of content specifications.

The policy instruments emphasized also vary from effort to effort. For instance, the New Standards Project, a coalition of 18 states and five school districts, is focusing not on content specifications but on performance-based assessment. Content standards will be specified in the course of developing assessment standards.

Many questions are raised by the use of standards to promote improvement. Can they be used to enhance opportunity to learn? Will they improve teaching and learning? Will standards lead to higher performance by all students or will they produce new inequities? Will the standards be reinforced by the broader society, by colleges and employers, for example? Such questions are the subject of debate and discussion in schools, districts, and policy arenas throughout the United States.1

Aside from these issues, there is another crucial question—how are standards actually developed? One of the most cited failures of previous curriculum-reform efforts was their neglect of process. This brief deals with an important challenge of standards-based reform: creating a process to develop standards.

The brief outlines some lessons suggested by past and current efforts to develop ambitious standards. It draws on studies by CPRE researchers of standards-setting processes in five states: Vermont, Kentucky, New York, California and South Carolina, and three national curriculum standards projects. The projects are NCTM's efforts to develop standards for math instruction and evaluation, the College Board's design of its Advanced Placement program, and the National Science Foundation's efforts of the 1950s and 1960s to reform science curricula (Massell 1993; Massell, Kirst, Kelley and Yee 1993).

Consensus vs. Innovation?

A critical component of nearly all current standards-setting efforts is a serious commitment to forging broad public as well as professional consensus. But the idea of establishing agreement on expectations for student learning is new for American schools (Cohen and Spillane 1993; Fuhrman 1993). Without historical models to follow, states, localities and national groups are experimenting with new structures and procedures to reach broad consensus. They are drawing participants from a cross-section of interested parties, including teachers, parents, students, administrators, university faculty, business and community leaders, and policymakers.

Educators today are keenly aware of the problems that result when goals of change are not widely shared (Carlson 1992). In emphasizing consensus, standards groups are trying to avoid the mistakes of past curricular reform projects that neglected the social and political realities of implementation (McLaughlin 1991; Elmore 1993).

Establishing a broad consensus, however, is often in tension with achieving leading-edge standards. As one participant in the NCTM effort said:

On the one hand, if these standards were to stand as the banners of the community, then they had to reflect shared values and commitments. On the other hand, if change was desired, then these standards had to do more than reflect current practice. New ideas were needed, ideas that departed from extant assumptions and practices. (Ball 1992, 2–3)

NCTM did, in fact, achieve a high degree of consensus around what many perceive to be leading-edge content standards. It embarked on an extensive consensus-building process which involved thousands of practitioners, academics and other professionals as well as members of the lay public in different stages of agenda-setting and capacity-building. While some disputes linger, the degree of acceptance NCTM has achieved is what other standard-setting groups aim to emulate.

Given the goal of achieving consensus while at the same time developing challenging and meaningful standards, the following points may inform the process.

A useful start to standard-setting efforts is to explore the nature of each subject-matter area under consideration.

Each field poses unique challenges to the problem of achieving consensus, and an understanding of the "terrain" of each area can help inform decisions about how to develop standards.

In many respects, current standards projects are operating in an environment with a remarkable level of agreement on the broad substance and direction of the reforms needed to create excellence. Across the subject-matter fields, for instance, there is a strong push for higher-order thinking and active models of learning; more interdisciplinary learning and understanding; more in-depth coverage of a core set of topics rather than wide, but superficial coverage of many topics; and more challenging content for all students.

But while consensus exists at this broad and general level, when it comes to more specific decisions, many professional and public disagreements arise. For example, disciplines differ in the extent to which subspecialties are discrete and the degree to which they can be readily linked.

In contrast to the field of mathematics, highly distinct and competitive subgroups exist within disciplines like science and social studies. All of the separate subgroups in science, like biology, physics, and chemistry, compete for resources and time in the limited school calendar. A common attitude is "the standards are okay as long as they represent more of what I teach." Debates over the actual content that should be included in science or social studies standards are more contentious than in fields like mathematics.

Disciplinary linkages to ethical, moral, religious, and social debates must also be considered. Defining content in fields such as the sciences and social studies is almost certain to ignite public and professional passions over religion, evolution, and multiculturalism. In New York, the conflict over multiculturalism in the social studies curriculum has pervaded the consensus-building process.

Careful research into the background of each subject area can help standards developers anticipate the challenges, assure representation that crosses divisions within a field, and deal effectively with such issues when they arise.

Processes for setting standards involve several stages of agenda setting, development and review intended to encourage professional and public participation.

Approaches to balancing representation differ significantly across various state and national efforts. Some place greater emphasis on grassroots involvement, some stress professional participation, and others rely on a blend of strategies at different stages of the process. Vermont's broad-based approach to standard setting (members of the public and teachers are involved in all stages of the process, and all teachers in the state receive draft copies of the standards for review) grows out of a long state tradition of citizen governance. The state education department sponsored a number of public focus forums across the state to generate standards for what students should know and be able to do.

In contrast, California has emphasized the participation of leading educators to create cutting-edge frameworks, strongly based in research and expert opinion. As a result, the frameworks have gained widespread legitimacy among teachers. South Carolina looked closely at the California experience and also turned primarily to teams of professional leaders. But the state then circulated draft frameworks to large groups of both professionals and the lay public. After using a multifaceted process that included telephone surveys and consultations with large committees and citizen focus groups to identify goals, Kentucky used professional task forces to draft goals, learner outcomes, and curriculum frameworks.

Even the most broad-based, consultative processes can only reach a fraction of the citizens and a portion of the teachers and administrators who will ultimately use the standards to guide instruction. In the end, each school and district will have to develop its own versions or understandings of standards. Including the public and teachers in state or national efforts probably produces a better as well as a more legitimate framework, but it will not preclude local debates over implementation.

Standards development activities require reasonable time schedules.

One factor that seems to be a crucial precondition for developing consensus is time. One of the keys to NCTM's success was a slow, lengthy development process which took nearly a decade to complete. The association took plenty of time to educate the community about the need for standards, conduct research before the development committees met, and to solicit review and feedback.

Current reform efforts are operating in a more politically charged environment than existed when NCTM was deliberating. With the possibility that federal programs will require states to develop standards, and with state political leadership impatient for standards-based reforms to get underway, 10-year developmental processes are no longer practical. Despite the press for speed, however, allowing sufficient time for a broad review and feedback process is a critical component of any consensus-building strategy.

Standard setters are finding that different subject areas are not amenable to a single, rigid format.

While a common format may be desirable for some purposes, rigid formats may be unsuitable for different content areas.

Common formats might be useful for large issues that cross areas. For example, a state, association, or district might decide whether standards in each subject should address only what students should know and be able to do or also discuss assessment and teaching pedagogy. The intended purpose of a document is an important consideration which may lead to common design features. For instance, because one purpose of the California frameworks is to guide state-adopted textbook selection, each framework must contain a section stating adoption criteria.

However, the experiences of several groups suggest that the idiosyncrasies of different subject-matter areas may call for some differences in format. Assessment developers working on one of the National Board for Professional Teaching Standards' teams argued that the five propositions of good teaching which all the standards-writing groups were to follow squeezed out pedagogical and content logics unique to their own disciplines (Pence and Petrosky 1992).

California originally had an outline for all frameworks, but abandoned it when staff reported that it was too constricting. Thus formulaic requirements may thwart tailoring the structure, sequence, and design of the document to the unique pedagogical and substantive demands of the different discipline areas.

Standards entities require mechanisms to "bridge" subject areas and ensure cross-disciplinary discussion.

Coherence across the subject-matter standards (not just within) is necessary to ensure that as a collective the standards are "doable" during the school day and year. Most of the National Science Foundation's 1950s and 1960s science curriculums did not take into consideration the competing demands and interests which fight for time and resources within a school. Additional time for science meant that time for other subjects had to be reduced, and science did not win out in the end.

Encouraging cross-disciplinary discussions during standard setting may improve the prospects for developing interdisciplinary teaching and learning. In addition, interdisciplinary efforts can be one way to avoid outpacing the capacity of schools and classrooms. For example, in the absence of cross-disciplinary approaches, elementary teachers will have to rapidly absorb new, distinct standards for each separate subject.

Some state standards efforts are doing much more than bridging the disciplines; they are trying to create learner outcomes that integrate and avoid distinctions among subjects. It is too early to assess the pros and cons of separate subject frameworks vs. integrated documents, but it is important to remember that teachers are accustomed to disciplinary distinctions and subject-based curricula and may need special support to use integrated documents as guidance. As standards-setting efforts negotiate the continuum from free-standing, nonintegrated disciplinary frameworks, to more articulated/coordinated efforts, to frameworks with interdisciplinary themes and sections, to totally integrated sets of outcomes, they will have to decide whether to accept or to restructure traditional, disciplinary approaches to the organization of knowledge.

Decisions about the best level of detail and specificity are important components of standards-setting efforts.

The specificity issue raises many questions about the flexibility of the standards, their ability to lead, and their ability to provide substantial guidance to other policy components such as assessment. On the one hand, people argue that the standards should be broad enough to allow for many different curriculum designs and teaching approaches. On the other hand, broad standards are subject to multiple interpretations and may lose their potential to promote high quality and to anchor other policy efforts. For example, some have criticized the NCTM standards for lacking sufficient precision to guide assessment, program selection, or program evaluation. The balance between specificity and flexibility can be a difficult one to achieve, but standards efforts need not see these as either/or alternatives. For example, standards can provide the flexibility for school and teacher choice by designing alternative strands of relatively precise standards.

Standards efforts need mechanisms for dealing with controversy.

While careful research into the nature of the subject area can help development processes identify potential problem areas, it will not protect them from the lobbying of citizens and various interest groups when controversial issues inevitably arise.

The very nature of the standard-setting exercise, which requires making explicit decisions about which content objectives are to be included, invites debate. For example, efforts to promote outcomes-based education in different states are being attacked by people who view both the content of the outcomes and the shift away from traditional input requirements like credit hours as a way of imposing values counter to their beliefs, or straying from the central purpose of schooling.

Many states' standards have identified not just academic outcomes, but also affective outcomes, such as Pennsylvania's goal that students shall "understand and appreciate others." The outcry over this and similar statements that seemed to focus more on values than academics was vociferous, and Pennsylvania subsequently backed away from some of its outcome statements.

Institutional mechanisms which buffer standard setting from the direct control of politics can help protect the integrity and leadership potential of the standards, as can strong leadership. NCTM, for example, set up a commission to oversee the standards writing groups, thus providing a forum for debate. In California the active leadership of the state superintendent helped to steer the process through many political battles.

Some level of controversy will be inevitable. Equating consensus with the absence of controversy can produce standards, which use vague, open-ended language subject to multiple interpretations. Vague, agreeable standards are unlikely to change school teaching and learning. Similarly, standards committees in some of the highly fractured fields like science or social studies may be tempted to patch a consensus together by including every subdiscipline, and every demand, equally, in the final standards document. But this approach can result in a fragmented and incoherent curriculum which emphasizes breadth of coverage over depth of inquiry, a result which is certainly not "world class."

Another approach to consensus-building is the strategy used to develop the College Board's Advanced Placement (AP) curriculum and examination system. To produce these documents, the College Board surveys participating colleges and universities to closely align the AP program with current college curricula. In this way the program reflects the actual, "average" curricula. However, the survey approach also restricts the level of innovation included in the content standards. In other words, by limiting itself to the curriculum that is, Advanced Placement courses do not often move the curricula to what it ought to be.

Standards-setting processes can be the initial step in continuing capacity-building efforts.

Because standards activities involve numerous educators and citizens, they build understanding and support for reform. But capacity building does not end once the standards are developed and adopted. NCTM's lengthy review and feedback process aimed at engaging the entire mathematics community and building familiarity with and giving legitimacy to the standards. The standards development process also indicated where continuing capacity building was most needed, such as, in the area of using calculators for computation.

In California, the framework development process has been followed by efforts to support curriculum development at the district level. The state department issues many publications to support curriculum development based on the frameworks, provides pamphlets for teachers on supplemental literature that supports the frameworks, issues booklets for parents, and develops model curriculum guides for grades 9–12.

In contrast, many of the National Science Foundation efforts in the 1950s and 1960s saw educators as consumers of reform who needed retraining, rather than as partners in the curriculum reform effort. There was little connection with continuing staff development and leadership or with teacher education. Therefore, only a few teachers were prepared to use the new teaching methods required by the curriculums, and even where they were adopted, they were frequently taught in the "old" way.

Despite efforts of states like California to involve and assist teachers, investment in building capacity to support standards-based reform is sadly inadequate. The emerging standards call for far-reaching changes in curriculum and instruction. However, most efforts to prepare teachers and administrators for the changes or to assure necessary technical assistance are small scale and temporary. Standards systems and processes can be helpful in alerting policymakers and the public to the need for long-term, substantial capacity building.

Standards will require revision over time.

One of the challenges confronting current standard-setting efforts is establishing a schedule for revision. While it may seem premature to contemplate changing newly minted standards, revision efforts will be needed lest current standards become calcified in policy and unresponsive to knowledge advances in the particular fields. The difficulty here is not only the human and financial resources involved in revisiting the efforts. The fact is that revision schedules must anticipate the significant period of time it takes for standards to sift through the policy system.

For example, even though each California subject-matter framework is scheduled for review only once every eight years, it takes about two years for publishers to respond to the new standards, and more time for tests to be developed and meaningful staff inservices to occur. As it stands, elementary teachers are faced with revising a new subject just about every year (Marsh and Odden 1991). Thus the revision schedules standards groups employ must balance the need to incorporate new knowledge with the concern that frequent revision can overwhelm the system.

Conclusion

This brief attempts to distill lessons from past curriculum reforms and from recent efforts of states, localities and associations to set standards for student learning. Several practical suggestions for the process of standard setting emerge. Standards efforts should:

- survey each content area, its domains and issues, in advance of setting standards;
- develop iterative processes for including professional and public participation;
- construct reasonable timetables for completion of standards;
- consider the use of multiple formats for various subject areas;
- develop activities to bridge disciplines;
- seek to remain flexible while developing standards that are specific enough to provide meaningful guidance;
- anticipate and address controversy; and
- support continued capacity building and plan for revision over time.

This list gives rise to two final thoughts about standards activities. First, while a number of aspects of standard setting appear to require tradeoffs and compromises, ways can be found to achieve balance that avoid sacrificing one value on behalf of another. States, localities and associations have found ways, through back-and-forth consultation and review, to include both professionals and the public; most efforts have not found it necessary to give up professional leadership to achieve public support or to forgo broader understanding in order to create frameworks respected by both practitioners and scholars. Similarly frameworks can be constructed that are both specific and flexible; neither goal need be scrapped in behalf of the other.

Second, standards efforts clearly have purposes and raise issues that extend beyond the seemingly narrow function encompassed by a term like "framework development." Standards processes raise difficult values questions and must deal with the controversies they unleash; they must provide for public understanding and support long-term capacity-building for professionals. Whatever the structures and mechanisms that states, districts and associations use for standards development, they must accommodate these varied and continuing needs.

Good discussions of other complicated issues surrounding student standards are found in Smith and O'Day 1991; O'Day and Smith 1993; Darling-Hammond 1992; Porter 1992; Porter 1993; Cohen and Spillane 1993; Fuhrman and Massell 1992.{1}

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A Framework for Managing Systemic Reform

by J. Timothy Waters and Franklin D. Cordell

(http://www.mcrel.org/products/noteworthy/timfrank.html)

The concepts, tools and skills presented in this article are based on well-confirmed research and were assembled and sequenced over several years of experience. The authors, who were at that time a superintendent and a school board member, were the architects of change in a district beset by all the demands, problems, complexities and personalities associated with change in a complex human organization. The reform enterprise undertaken by this district's leaders was not a controlled experiment but a responsible effort to bring about systemic change in an average-sized school district. The effort was districtwide. It involved thirteen thousand students, twenty-one campuses, six hundred and fifty teachers, five hundred support staff and thousands of families. The reform effort encompassed all dimensions of the organization, from creating a new management information system to training teachers in team play to nurturing hundreds of preschool children. Throughout the project, decisions were systematically informed and documented by action research.

Results in the Real World

The school improvement project resulted in outstanding improvements in student performance. Not only did the most gifted improve, but those struggling with school learning also made excellent gains. In 1989 fifty-four percent of the high socioeconomic status (SES) students were performing at or above standard on the writing assessment. By 1994 ninety-two percent were successful. Only twenty-two percent of low SES students were performing at or above standard in 1989, but by 1994 that had increased to eighty-three percent. The project improved student performance by supporting organizational learning, introducing new norms into the organizational culture, building public support, raising expectations for all students and improving assessment and instructional systems (Cordell & Waters, 1993). The district's leaders systematically changed policies, procedures and practices to lead and support those changes. Most educational leaders know that some combination of activities will create sustainable systemic improvement without creating monumental resistance in the community or self-defeating conflict within the organization. But which combination of activities should be chosen and in what sequence must they be implemented? Which activities are essential? Leaders ask, "How are we to respond to conflicting mandates and demands?" "How can we avoid the pitfalls plaguing others—the leaders who set out early but whose efforts are now mired in conflict and political bickering?" Many leaders ask what went wrong, and what they can do to create sustainable systemic improvement. No single source provides answers to these questions and few consultants could help with the overall project. Literature on managing change, quality management, learning, thinking, instruction, curriculum development, constructivism, and motivation is so great as to overwhelm already busy leaders. Models of organizational development abound, but most of them focus on the technical dimension of change and fail to help leaders of organizations who must make decisions and act in the light of public attention. Anecdotal stories and case studies of successful schools and school systems help but are limited because conditions of the anecdotes fail to match the circumstances of the district needing help. This article provides the reader a project management framework for organizing relevant theory, important research, and practical experience to help answer the questions, "Where do I start?" and "What do I do now?" The response presented here is organized around seven task areas (projects) in which practitioners must simultaneously design and initiate activities to accomplish systemic change. The goal of the kind of systemic educational reform effort discussed here is to improve both the quality and equity of learning and achievement—that is, to increase learning and achievement for all students regardless of race, ethnicity, income, or family background. The authors know that this goal can be achieved if this framework is used. Using the experience and information offered here will result in improvements in both the quality and the equity of learning and achievement in those school systems with the determination to produce both. To do so, however, will require courage, commitment, focus and almost limitless energy. Producing desired results will take considerable time, perhaps as long as seven years.

Project Management Concepts

This work is an extension of *Improving Student Performance* (Cordell & Waters, 1993). In that monograph the authors articulated five guiding principles and eight processes to be used to realize them. The approach outlined below applies the techniques and concepts of project management to the processes of the school district reform effort. This approach provides several practical advantages for practitioners by making the leadership functions required more concrete. The overall reform effort of improving student performance by building "Championship Schools" is broken into seven projects, each described in terms of milestones and tasks. This article does not specify steps to complete those tasks. The steps to be taken, and the order in which they must be taken, are to be defined within the culture and organization of the local district and community. Rather, the focus here is on the nature and essential elements of the projects. The projects are interdependent. Progress in any one project may be dependent upon reaching a milestone in another project and vice versa, and changes in any area inevitably will create ripple effects in one or more of the others. The following section will define the seven interdependent projects and describe the work to be accomplished in each.

Project 1: Plan and Integrate Projects

Project 1 is a kind of super project in which the district's leadership team clarifies, sequences and integrates the other six projects. Planning and integration are ongoing rather than being completed prior to starting the other projects. Planning is the formal starting point for systemic change. An accurate assessment of current realities is made and a vision of a preferred future is created. Properly approached, planning can create the excitement and momentum necessary to move the system out of equilibrium. Project integration is the process of monitoring, sequencing and supporting the other six projects and continually making the connections between them. The approach suggested here is whole systems planning (Weisbord, 1987). Its purposes are to:

- create a shared vision of a preferred future among a critical mass of interested individuals,
- identify the sequence of activities necessary to realize the vision,
- establish the benchmarks to be used to mark progress,
- formalize timelines,
- assign responsibilities, and
- guide resource allocation.

Whole systems planning is structured to involve large numbers of individuals from various constituencies in a five phase process. The phases are:

1. Identify the trends that may affect the school or school system. These trends can be listed and discussed in terms of what is probable versus what is improbable, and those that are desired versus those that are not. This phase is sometimes described as an external scan.
2. Assess which of these trends will affect the quality and equity of outcomes of the system and how the system will be affected.
3. Analyze how the system evolved to its current state. This phase includes the history of the system as well as the stories people share about the system (Deal & Kennedy, 1982). Additionally, this phase includes a discussion of what people are most proud of in the system, as well as things about which they are most sorry (Weisbord, 1987, p. 291).
4. Agree on the goals of reform and a vision of the preferred future for the system. Prior to beginning the plan development process, it is essential that the stakeholders clarify their most deeply held values about learning, children, the system, and other important issues because the vision should be grounded in those shared values.
5. Identify the important strategies that must be used to create the preferred future. Specific data must be collected prior to beginning. These data—in addition to standard demographic, financial, and performance information—should include the current perceptions of school held by key constituencies both inside and outside the system.

The plan that comes out of the process should address, in some fashion, the other six design tasks, or projects, listed below. Each of these will have to be addressed as issues and problems if they are not incorporated into the plan. Additionally, the plan should produce a "chartering" of the process and practices that will be required in order to realize the preferred future. A charter represents the symbolic as well as real beginnings of the process that will create the change to move the system from the present, the current practices and culture, toward the preferred future, the achievement of the goals. It should call on those who are part of the planning process and those who support its result to make a commitment to also support the changes that the plan will create and the people who will be expected to initiate the changes.

A thoughtfully developed plan, continually monitored and periodically updated, can create extraordinary excitement, enthusiasm and momentum. It serves as the basis for connecting and integrating all of the other six design tasks.

Project 2: Develop a High Performance Management System

Systemic change requires new approaches not only in the areas of planning, curriculum development, assessment, and instruction, but also in management. The "Total Quality Management" movement offers several practices that need to be incorporated into the management of every school and district as teachers work to improve instructional and assessment practices (rf. Bonstingl, 1992; Glasser, 1990).

Quality Process

Quality process is at the heart of a high performance system (Hanna, 1988). A functioning high performance management system in a school district is one in which teachers, students and support staff know that they have developed and are using a quality instructional process to get results. A quality process is one in which people "get it right the first time" or before they move on. That is, the process being used in classrooms is producing quality learning for all of the students. Teachers do not move a student on to new learning challenges until they are sure the student has mastered the prerequisite learning. When a quality process is being used, value is added, learning occurs, every day. Teachers involve and engage students in assessing whether the instructional processes being used are as effective as they should be.

Continuous Improvement

High performance management systems attend to and produce continuous improvement in the instructional process. Teachers, students and administrators systematically improve on the performance of the day before. Quality emerges as quality processes are put in place. Teachers know they are continually improving their processes and that students are continually improving in their learning and performance when they are receiving consistent real-time data on student performance.

Teaming

High performance management systems are characterized by cross-functional teams made up of people who are interested in the same quality result but have different responsibilities for producing it. Teachers from multiple grade levels discussing student performance and sharing observations about what has worked and what has not is an example of a cross-functional team. When teachers at one level begin to see and work with teachers at the next level as their customers, and to see the teachers from whom they are receiving their students as their suppliers, and they are all involved together in an ongoing discussion of how they are doing and how they can improve their process, then the chances of improvement in both process and result are greatly enhanced.

Coaching

Henry Ford perfected a system in which uneducated workers could contribute to complex manufacturing processes and turn out inexpensive automobiles. Engineering, design, business and marketing experts were centralized. Their expertise was passed piecemeal to the workers through hierarchical supervisory structures with the charge to command and control the workers. Ford organized and orchestrated the muscle of his workers, but the process disempowered workers and created a culture in which workers and management are fundamentally at odds. In contrast, school improvement relies upon organizing and orchestrating the energy, commitment and creativity of everyone in the system. The mass production culture that conceptually separates expertise from workers has to be replaced with an empowering culture. The new culture relies heavily upon coaching where supervision has been used in the past. Good coaches do certain things to ensure that those with whom they work consistently perform at optimum levels. Successful coaches:

- help their charges develop a program of action that will likely achieve their goals,
- create and successfully communicate a compelling vision of success,
- teach the skills essential to success to their charges so that all master the skills before they are asked to use them in "real" situations,
- make the complex simple,
- match assignments and responsibilities to the talents of their charges,
- consistently build on strengths as they also work to overcome weaknesses,
- turn less than optimum performance into learning experiences rather than failure experiences,
- learn to anticipate and teach their charges to anticipate what is going to happen next and how to respond before it happens,
- periodically call a "time out" to adjust to changing conditions and assure success, and
- model the kind of commitment and performance they expect of their charges. (Martens, 1942)

In Championship Schools, principals, teachers, support staff, parents and students all understand and assume the role of coach for those who need coaching. They are dedicated to the development of talent and schedule time to meet in coaching conferences. They are inspired by the vision of a school in which all are well prepared for productive lives, and they are willing to "pay the price" necessary to assure that their vision becomes a reality.

Project 3: Move People Through the Transition to Empowerment

People do not resist change; they resist the transition created by change (Bridges, 1991). The transition is the psychological adjustment people must go through as their roles and responsibilities change as a result of the organizational change, e.g., school improvement. Empowerment is the enhanced capability people experience as organizational conditions change and they gain the capacities needed to contribute, the control of their time needed to plan and develop new procedures, and the connections with others needed to exchange information and take effective action. Imagine a continuum one end of which represents the disempowerment people experience as the organization enters a period of restructuring. The other end represents a set of conditions in which people are optimally empowered as a result of moving through the transition successfully. William Bridges (1991) says that people move through the transition in three stages: endings, the neutral zone, and new beginnings. During the first stage, old ways of doing things are evaluated and some are marked to be discontinued. The community then must recognize and acknowledge what is ending. But endings create real losses for people and they grieve those losses, so leaders must manage the endings before creating the new ways. If they try to invent new ways before the old are put to rest, confusion and the desire to return to the comfort of the old ways may rule the day. The second stage, the neutral zone, is "the no-man's-land between the old reality and the new. . . . a time when the old way is gone and the new doesn't feel comfortable yet" (Bridges, 1991, p. 5). The neutral zone is also a period of exploration and invention of new ways to replace those that have ended. This state is attended by stress and anxiety for some and hope and excitement by others. Leaders must learn to help everyone sort out and redefine the situation. The third stage, new beginnings, is a time when new ways are ritually accepted and institutionalized. Leaders facilitate new beginnings first by helping people clarify the purposes and desired results of organizational change and decide what is worth doing. During this process leaders must help workers develop a picture or personal vision of what the preferred future, the changed system, will look like. Workers must be able to imagine the new organization before they can commit to it. Finally, each individual must see his or her own part in the plan and in the reformed system, the outcome of the change. Leaders must take four steps in managing the transition. They must:

- manage endings and losses by building relationships with opinion leaders that help them help others establish personal understandings of the transition and gain symbolic closure to and honor of the "old;"
- permit grieving to run its course and not mistake it for low morale;
- work to develop agreement on the norms and standards that govern people and behavior; and
- appoint, train and charge a transition team designed to monitor progress, identify issues, control rumors, provide support, assist with communication and just listen to people in transition.

As people move through the transition, they develop a sense of purpose, a picture of what they are trying to create, an understanding of the plan and their part in the process. As they move toward empowerment, they must build capacity to contribute, create connections with others so they can exchange information and take concerted action. Finally, they must achieve some control of the time and resources needed to do their jobs effectively.

Project 4: Build a System of Standards and Supporting Assessments

Systemic change will occur only when clarity of organizational purpose exists. The planning process should clarify the school system's purpose. This project builds on a system purpose to educate all children well. It requires that there be agreement on what is the most important learning to occur within the system and on appropriate mechanisms for assessing whether or not there is quality and equity in the learning. This project creates clear targets for teaching and learning and establishes content and performance standards for student learning. Setting content standards requires the involvement of teachers, parents, students, administrators, board members, employers, and post secondary educators in a process to identify what they, collectively, believe students must learn—what they must know and be able to do—if they are to be successful in their lives after schooling. Performance standards follow the creation of content standards. They determine how well, how often and for how long students must demonstrate mastery of content knowledge and skills identified as essential (Kendall & Marzano, 1995). If students must be able to read or write well in order to be successful in life, then the performance standards set the criteria for reading or writing well enough to be successful. The performance standards can be benchmarked down through the system so that all teachers, students, and parents are continually informed about whether or not students are successfully making progress toward meeting standards as they move through the grade levels/years of schooling. In order for content and performance standards to be meaningful, an appropriate assessment system must be designed. The assessment system must be affordable, valid and reliable and based on seven assessment principles explained by Don Burger in another Noteworthy article, "Designing a Sustainable Standards-based Assessment System." The feedback provided by a standards-based assessment system is how people will know if the system is achieving its purpose.

Project 5: Implement a Championship Instructional Process

Once both high standards and high expectations for all learners have been established, it is essential to design an instructional system that creates a very high probability that all of the students will meet the standards. An extensive literature provides a wide variety of approaches for creating this probability. Among all of the possibilities that can be considered, there are two that should serve as the basis for organizing all other efforts. The first of these is "Learner-Centered Principles," developed by the American Psychological Association (APA) Presidential Task Force on Psychology in Education led by Barbara McCombs and published by APA and McREL (1993). The other is "Dimensions of Learning" (1992), developed by Bob Marzano of McREL and published by the Association for Supervision and Curriculum Development (ASCD). Working with these research-based models, it is possible to design an instructional program that is both learner and learning focused. It is essential that the instructional program:

- challenge students to do their best and continually strive for excellence,
- nurture students and create continuity in their experience,
- be delivered through instructional and learning teams to create rich and varied experiences for both students and teachers,
- strive to attain the level of excellence that can be realized through tutorial-like instruction,
- incorporate flexible groupings of students within their teaching and learning teams to make best use of time and to provide expanded learning opportunities, and
- incorporate the development of optimistic explanatory style (Seligman, 1991) among all of the learners involved in the process.

The activities designed and implemented in this project are central to producing quality and equity in learning. They are interactive with all of the other activities in all of the other projects, however, and must be approached and implemented accordingly.

Project 6: Build Public Support for Change and Improvement

No school reform effort can succeed over the long haul without community support. Most school leaders have seen substantial school improvement efforts stillborn or stalled early in the process because of lack of support among community members. The symptoms of low levels of community support are manifested in failed bond elections; school board indecision, conflict and an obsession with operations rather than strategic concerns; the constant shuffling of personnel; the distraction of leadership by demands to manage conflict at the building level; low staff morale that borders on defeat; a system-wide obsessive attention to cosmetic detail rather than matters of substance; and the retreat from improvement projects just as they start yielding results. School improvement projects live or die by public support. As important as it is, building public support is often the most neglected and mismanaged project in school improvement. An effective approach to building support is based upon the following realities:

- Community members are the customers of our educational system; they decide if they will or will not pay for or even tolerate efforts to improve our schools.
- The school board is elected by, and often intimidated by, interested customers; so board members are especially responsive to those community members who come forward and express their opinions even when they are not in the majority.
- School people often make the mistake of believing that the one-way communication of facts and information through bulletins, newsletters and articles effectively shapes customer opinion.
- Customer opinion is colored by the fact that they are fed up, angry, overwhelmed with communication, disillusioned and scared in a world where for the first time civilization is more dangerous than nature.
- Schools are closer than other sources of frustration, so customers often work out their general frustrations on school issues.
- Being listened to is healing and customers want to be listened to. Educators can provide a structured context in which customers can communicate their feelings and form supportive opinions.
- Customers form opinions from their perceptions, not from information. Their perceptions are more deeply influenced by relationships with key opinion leaders than by facts and figures.

Each move in the school improvement process can be facilitated or blocked by community opinion. For that reason, the most effective approach to building support is first to search out and understand the opinions of community members. We recommend the use of the structured communication process in community forums and focus groups (Cordell & Waters, 1993). At the same time school leaders must identify key opinion leaders in the community and form trust-building relationships with them. These relationships are built in the community through face to face communication. Simply talking and delivering information will not work. School leaders must learn to listen and create an ongoing dialog with leaders. Identifying opinion leaders takes a little time but is not at all difficult. Opinion leaders are people who share a common interest in school improvement, can help or hurt the effort through their behaviors, are activists who will act on their opinions, have a following, get around to talk to a lot of people, and have credibility. To find the key opinion leaders in your community, all you have to do is ask enough people. Some opinion leaders are role models who are living the behaviors you would like to see in everyone else. Others are technical experts to whom others defer because of their expertise. Some opinion leaders are power people who can make life easier or harder for others. Others are cheerleaders who operate from the heart and lead by charisma. The next step is to create a communication network of key opinion leaders. The goals are to continue to build trust, learn about community opinions from them, set up communication channels to speed communication when necessary, and work with them to carefully shape the messages they are to deliver. Opinion leaders want to know first and hate to hear about anything by reading about it in the newspaper, so school leaders must create a briefing system for them. While working with teachers and staff is seen by some as "preaching to the choir," it is critically important when building support for change. Key staff members must be trained to understand the principles of communication through relationships with key opinion leaders. They also must be trained in team building and team playing. Since relationships are built in the neighborhoods, teachers and principals carry much of the burden of relationship building and each campus should have a "community relationship" team. While building public support through an effective communication strategy may seem complex, it is not extremely difficult. And a supportive community will reduce the overall effort required to sustain the school improvement process.

Project 7: Develop an Integrated Human Services Delivery System

Schools everywhere are confronted with the consequences of fragmenting and dysfunctional families and increasingly needy children. Schools that successfully produce championship performance in all of their children are those that bring the agencies and resources that serve their needs outside of school into the school. Integrating human services delivery systems increases the chances that problems will be solved so children can focus on learning. The schools can never control all of the events and dilemmas that impact their children outside of school. Nor can the schools generate all of the resources that many of their children and their children's families need to successfully overcome the many obstacles they face on a regular basis. What schools can do is become the catalysts for bringing the agencies and their resources that serve children and families in need into the schools and help make access to them as easy and efficient as possible. The practice of integrating human service delivery is being successfully implemented in urban, suburban and rural schools all over America (Melaville, Blank, with Asayesh, 1993). Through programs like Cities in Schools and Communities in Schools, the blocking needs of children are being addressed effectively. Schools are becoming the facilitators or brokers of access to services in such a way that the school becomes the one stop that families need to make to support the success of the family and the success of their children.

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ASSESSMENT

Designing a Sustainable Standards-based Assessment System

by Don Burger (http://www.mcrel.org/products/noteworthy/donintro.html)

The national education goals adopted by President Bush and the nation's governors at the Charlottesville, Virginia "Education Summit" in 1990 gave rise to the development of national standards in many content areas. The National Council of Teachers of Mathematics (NCTM) had taken the lead by issuing its "Curriculum and Evaluation Standards for School Mathematics" in 1989. Other domains such as science created committees to attempt to resolve divergent views within content domains and find ways to reach consensus about what students should know and be able to do. Educators in history, social studies, civics, geography, language arts, the arts and physical education have been exploring areas of common ground and areas of divergent opinion in an effort to reach consensus on standards.

The recent re-authorization of the Elementary and Secondary Education Act—now the Improving America's Schools Act (IASA)—increased the importance of having standards for each school receiving federal funds. While some K–12 schools and districts are willing to accept the challenge of systemic change, others will develop goals or content standards and insert them in front of their existing curriculum guides without making any changes in the educational system. The same schools will then deem themselves in the forefront of the standards movement and aligned with national standards.

However, designing and implementing a sustainable standards-based system that consistently yields high student achievement involves more than setting and measuring academic goals. The process of changing to a "standards" frame of reference goes much deeper. Changing to a standards-based system provides an opportunity to re-examine the organizational elements (Cordell & Waters, 1993) of a school system: fundamental purpose, principles, policies, processes, practices, programs and procedures. Standards present an opportunity to examine or clarify these organizational elements as they are viewed by all the groups within the school community—teachers, school administrators, other district staff members, parents and other community members. Establishing clarity on the organizational elements—e.g., purpose, principles, and policies—may do more to help schools and their communities re-establish trust in public education than many of the current reform efforts which tinker with how schools work—or don't work.

Figure 1 is an attempt to illustrate the interrelationships of the organizational elements with classrooms, schools, districts, and communities as systems. The top of the diagram represents these four systems. The boundaries between these systems are permeable. Interaction between systems occurs most frequently with the systems closest to one another.

Within each system, there are a number of organizational elements that direct and validate the actions taken by the system and its members. These organizational elements—purpose, principles, policies, processes, practices, programs, and procedures—are represented in Figure 1 by the diagonal slice (Waters, personal communications, 1995). Each of the organizational elements interacts with the others, with those that are more proximal interacting most. The outer layers of procedures, programs, practices, and processes are most permeable, are the easiest to change, and offer the least resistance to change. Consultants find changes aimed at the procedural and programmatic levels are the easiest to implement. Organizational elements toward the center of the diagram, e.g., purpose and principles, are less permeable, are much more difficult to change, and involve much greater resistance to the changes.

While educational reforms that tinker with the outer layers are easiest to accomplish, they have the least meaningful, sustained impact on student learning. The literature is replete with efforts aimed at practices, programs or procedures that have little sustained significant impact on student learning. To achieve significant and sustainable improvements in student learning requires changes in the fundamental core elements of the system. This article will describe each of the organizational elements and will address the ways in which each of these elements influence the design of a sustained standards-based assessment system.

Each organizational element has a role in directing how schools are run, how students are taught, and how students are tested. For example, the impact of the traditional purpose of schooling was to sort and select students. Traditional purpose was supported by the belief that not all students can learn, that education should "tease out" the very best, and that some students should fail. Consequently, principles, policies, processes, practices, programs and procedures were developed in which all students were taught the same way, given the same amount of time, and tested with assessments based on the "normal" (bell-shaped) curve.

In contrast to traditional beliefs, researchers are finding that, although students do learn at different rates and in different ways, virtually all students can learn. Given appropriate time and instruction and clear expectations, many of the students previously written off can meet or exceed rigorous academic standards. Classrooms, schools and districts that have been successful in creating educational systems in which all students are learning have changed more than educational goals and tests. Successful sites have changed the core of the system: purpose.

Purpose

Purpose is at the core of each system and is most difficult to change. School staff frequently reflect many diverse views about the purpose of schooling. The combinations and interactions of the views of stakeholders form the culture of the school and underlie principles; direct policy; and validate processes, practices, programs and procedures.

Changing purpose is a slow and painful process. Members of the school/community become uncomfortable when different perspectives challenge their own. Resistance to change is always present. Resistance is the system's way of remaining the same. Staff who are very comfortable with things just the way they are, are comfortable because their beliefs match those of the system. For example, staff who believe that some students cannot learn are very comfortable moving forward students who are failing.

The central purpose for schooling is at the core of the system. Purpose is reflected by the question, "Who is expected to learn?" Traditionally, schools were designed to serve the best and the brightest, sorting out the others for manual labor jobs. Traditionally, white children of high socioeconomic status (SES) were expected to do best. The traditional educational system was designed to further that end. Standards-based education introduces a different purpose, one that is focused specifically on sustained student achievement for all students—regardless of gender, race/ethnicity, or socioeconomic status. Table 1 contrasts traditional and standards-based education systems in terms of purposes of schooling and impacts of their contrasting purposes.

Table 1

PURPOSE	FROM	TO
Who Is Expected To Learn?	**Learning is the birthright of white high SES students.**	**All students can learn given appropriate time and instruction.**
mpact	**Not all students can learn. The best and brightest survive.** **Equity means students have equal access to programs that result in unequal performance by groups.**	**Each student is expected to meet or exceed the standards.** **Equity means that each student receives the instruction and time required to reach the standard. While all students reach the standard, differences in performance still exist.**

Principles

Principles must be congruent with the "core purpose" of the system. Principles provide the direction and guidance for the system much as a compass always registers north regardless of one's position (Covey, 1991). Guidance is precisely the value of principles. In assessment, there will always be new content standards and new ways of measuring those standards. It is the principles that will provide the guidelines and parameters for selecting the new or replacement assessment systems.

Seven design principles are required to create an assessment system that produces significant and sustainable improvement in student learning. These design principles are more than a map or guide; they provide clear direction. The seven design principles build an assessment system that is accountable, flexible, standards based, anchored, ongoing, disaggregated, and transition focused (Cordell & Waters, 1993). When tests and assessments change, it is the design principles that remain constant. Any new assessment that is incongruent with the design principles will be purged by the system. Table 2 below shows the differences between traditional and standards-based systems on all of these design principles.

Table 2

PRINCIPLE	FROM	TO
1. Accountable	Test data are not used for instruction or verification of student learning.	Commitment that all students will meet standards by the time they make their transition from level to level or graduate.
2. Flexible	Testing is a fixed, grade-leveled event that accommodates variation in student learning by expecting a bell-shaped distribution of scores.	Testing is flexible. Students challenge the test when they have demonstrated they are ready to be successful. Differential learning rates are accommodated by offering the tests over groups of grades rather than grade levels.
3. Standards-Based	Student performance is compared to that of other students even though some students may not have received instruction on the material tested.	Student learning and performance are measured against a standard through the use of valid and reliable instruments.
4. Anchored	Student performance is compared to the performance of other students on an average national curriculum.	Internal district standards are tied to acceptable external standards through the correlation of performance on the performance assessment to performance on a traditional norm-referenced achievement test.
5. Ongoing	Testing is an annual, one-time event, usually during October or April.	Testing is a continual process that provides student performance data to teachers and students in "real time."
6. Disaggregated	School and district scores are reported as single mean percentiles. Scores are not reported by gender, race/ethnicity or socioeconomic group.	Scores are disaggregated by gender, race/ethnicity or socioeconomic status and are publicly reported. However, schools are not compared.
7. Transition-Focused	Since a normal distribution of scores is expected, there are no expectations that all students will be prepared to be successful at the next level. Students are socially promoted.	Clear expectations are defined for students to accomplish prior to moving from one level of the organization to another and graduating.

Systems that design for **accountability** commit to the concept that all students will meet standards. Traditionally, education has sorted and selected students (core purpose), much like separating cream from milk. The "cream" were destined for higher education and the remainder for the work force required in the industrial age. The traditional system filled the need for a large common labor force; consequently, students were identified through a failure process.

The concept of educating all students will be rejected by systems whose core purpose is sorting and selecting. Schools or districts must change purpose before education for all can be adopted by the organization. Rather than test students at fixed grade levels, standards-based systems are **flexible.** Students challenge the tests after they have received instruction and when they have demonstrated they are ready to be successful. Testing becomes a success experience rather than a failure experience.

Standards-based systems bring clear focus on high but achievable targets for students to meet rather than comparing students to the performance of other students. Content standards precisely describe what students are expected to know and be able to do. When this information is shared with students, to no one's surprise, the students meet or exceed the standards.

The sustainable system is **anchored** against measures stakeholders have viewed as valid and reliable indicators. Standardized norm-referenced tests have become the de facto standard for American public education. Any replacement measurement system must be superior to the previously accepted system. As a beginning point, evidence about validity can be gathered by comparing the performance of the same group of students on both the norm-referenced test and the replacement measure. Standards-based or criterion-referenced assessments can be cross referenced to standardized norm-referenced tests by conducting a concurrent validity study (Burger & Burger, 1993). Students complete both a standardized norm-referenced test and a criterion-or standards-based test measuring a similar domain (reading for example). Statistical analysis will provide both correlational data and the relationship of performance standards to percentile ranks scores. The linkage between the two assessments can assure parents that the new assessments are rigorous and that the performance standards are worthy.

Sustainable standards-based systems change testing from an event in October or April to a continual and **ongoing** part of the instruction and assessment process. In the traditional educational system, the most efficient method of assessment is to test everyone at the same time. Standardized norm-referenced tests provide comparisons with other students in the same grades in the month of October, because teachers are still working on skills students have lost over the summer, or April, because students begin thinking about summer vacation in May. Assessment in standards-based systems is not limited by those parameters. Since the standard is fixed, students may attempt the test anytime they are ready to be successful. Assessment may not be an event at all. Assessment can be delivered as part of the instruction and assessment process.

Quality and equity, described by **disaggregated** student test data, are the basis for school improvement planning. Traditionally, quality was reserved for the top five or ten percent and equity meant that all students had an equal opportunity to participate. In other words, quality and equity focused on the "input" side of the system. Standards-based systems change the focus of quality and equity to the "output" side of the system. Quality is the evidence that all disaggregated data reflect attainment of high standards by students in all groups (race/ethnicity, gender, socioeconomic status). Equity is the evidence that there is no difference from one group to another in the percent of students meeting or exceeding standards. Disaggregated test data provide the evidence for quality and equity.

The sustainable standards-based system defines clear expectations for students to accomplish before transitioning, moving from one level of the system to another or graduating. The **transition focus** informs student, teachers, and parents about the status of the student on the knowledge and skills required to be successful at the next level. Every staff member is responsible for seeing that all transitioning students have met or exceeded the standard rather than just the teachers in the grade level being measured as is common in traditional systems.

Policies

Policies are the third element of the system. The most successful policies are those that match the purpose and principles of the system. Occasionally, policies that do not match the purposes or principles of the system are required by state or federal legislation. Those policies either cause chaos in the system or are enacted but never practiced. Careful examination of a district's policy manuals usually reveals many policies that are never practiced because they are incongruent with the purpose and principles of the system. Policies are required to maintain any assessment system. Assessment policies required in a sustainable assessment system include those that define and set standards and those that determine who, if anyone, is responsible/accountable for learning.

Standards

The term "standard" has been used synonymously to refer to curriculum standards, content standards and performance standards. Standards have come to mean many different things to many different people. Careful listening is required to determine which standards are being discussed. Kendall & Marzano (1995) distinguish curriculum standards, content standards, benchmarks and performance standards. Curriculum standards, they explain, "are best characterized as descriptions of what should take place in the classroom; as such, they address instructional techniques, recommended activities, and various modes of presentation" (p. 20). Content standards describe what students should know or be able to do. National groups developing standards—such as the National Council of Teachers of Mathematics (NCTM) and the National Committee on Science Education Standards—have mixed both curriculum and content standards in their standards frameworks. The term benchmark is used to describe the application of a content standard at a grade level or set of grade levels. Performance standards refers to the quality of the performance deemed acceptable for each content standard. Performance standards will be discussed in more detail along with rubrics in the section labeled "practice."

In addition, content standards have been viewed from two perspectives. The "literacy" model suggests that all students should meet or exceed performance standards in each content standard. "At the literacy end of the continuum, standards might be described as the minimum requirements of knowledge and skill students should know and be able to do to function well as adults of the 21st century" (Kendall & Marzano, 1995, pp. 13–14). The "expertise" model holds up the best examples to strive for, while expecting only the best to succeed. "At the 'expertise' end of the continuum, standards are described in terms of the knowledge and skills that, once acquired, would render students 'mini-experts' in every field" (Kendall & Marzano, 1995, p. 14). The standards-based system described in this article uses a literacy model approach in which all students would be expected to meet or exceed performance standards on each content standard. The process of defining and establishing content standards in policy provides an opportunity to fundamentally question what we believe students should learn and to reorganize the efforts of schooling to accomplish the goals. Table 3 contrasts how traditional and standards-based systems approach policy involving what students should learn. Schools and districts that adopt content standards that are incongruent with their purpose and principles will find that adopting content standards has made no difference in student learning, dropout rates or graduation rates. Traditional purpose and principles will resist changes to content standards at the policy level. Standards "too shall pass" just as have all the other initiatives which were very different from

Table 3

POLICY	FROM	TO
What Should Be Learned?	Curriculum adoption cycles, e.g., seven year cycles, determine when content area curriculum will be reviewed and new textbooks adopted.	Members of the school/community reach consensus on content standards, determine what is learned at each organizational level.
Impact	A publisher's textbook series is adopted. The textbook becomes the de facto curriculum and teachers teach to the textbook. Fixed time-180 class days and 45–50 minute class periods. All students proceed together regardless of learning. Teachers prepare one instructional delivery technique.	A variety of materials are used which provide experiences aligned with content standards. Teachers teach to content standards. Time varies depending upon student learning. Some students finish early and proceed to more challenging tasks. Some students receive more instructional time. Instruction is varied. Teachers prepare a variety of approaches that reach all students.

Stakes

In educational assessment, "stakes" refers to the consequences if learning does or does not take place. Who is accountable for learning? This is a question that must be resolved at the policy level of the organization. The easiest way to determine if the assessment system has stakes is to identify who is accountable for learning. The options are: no one (the most popular response); schools, but not teachers or students; or some combination of schools, teachers, and students. If there are no stakes for students, staff, schools, districts or states, i.e., no accountability, then the least expensive testing system without regard for validity, reliability and generalizability will suffice. However, if the system is accountable and stakes are used, then the issues of validity, reliability, and generalizability are extremely important. "Stakes" can take different forms. Some districts and states have developed systems in which the schools, but not the staff or the students, are responsible for student learning. Students are asked to give effort on testing in which they have little or no interest and which has no consequences. Is it any wonder we do not see superior performances? We are asking students to give their best effort on tests that we do not value enough to hold ourselves or the students accountable for the learning demonstrated.

"High stakes" systems are those in which promotion, certification or recognition can be denied based on performance or achievement as documented by assessment results. High stakes for

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students might require demonstrated competency before a diploma is issued. A medium stakes example ensues when diplomas are issued for class credits and "endorsements" are added for demonstrated competency. "High stakes" for staff would result if promotion, recognition or certification for staff were determined by rates of success in moving students to and beyond performance standards. "High stakes" might mean reassignment to another level where the person might be more effective or it might mean finding more suitable employment. "High stakes" for schools might require a change in the organizational structure for schools that are unable to move students to and beyond performance standards.

The assessment system must be properly prepared if "high stakes" are imposed for students or staff. The district must be able to prove that (a) what was tested was taught, (b) the reliability of the assessment exceeds r =.90, (c) students had more than one opportunity per year to attempt the assessment,(d) the tests are fair and free from bias, and (e) the knowledge and skills for which students were held accountable are really necessary for students to succeed (Herman, Aschbacher & Winters, 1992; Merhens & Popham, 1992; Phillips, 1993). Table 4 contrasts traditional and standards-based assessment systems with regard to stakes.

Table 4

POLICY	FROM	TO
Who is Accountable for Learning	No one is the system is held accountable for individual student learning because it is the fault of students who do not want to learn or parents who do not make their student learn. School staff are not responsible	The conditions for success lie within the school/community. School staff, students, parents and the school/community collaboratively are responsible for learning. School staff and students are directly responsible.
Impact	Since no one is held responsible for academic outcomes, mean or median test scores continue to be what they have been.	Students, parents and staff expect that all students will meet or exceed standards. All share responsiblility for learning.

Processes

In the context of organizations as systems, processes describe how purpose, principles, and policies will be delivered. Within the educational system, many processes must be defined to reach the organization's goals. The delivery of instruction is an essential part of the processes dimension. New theories about student learning and instruction that are not congruent with the core values of the system are resisted. Table 5 contrasts the differences in processes between traditional and standards-based approaches.

District level accountability tests

A series of process level questions that must be answered involve the district accountability assessment system. What role will the accountability assessment play in the assessment system? What instructional decisions will be made based on results of the district level accountability test? These are "process" decisions that are directed by purpose, principles and policy. In turn, process decisions about the role of accountability assessment impact district assets, i.e., time, effort, and money.

Table 5

PROCESSES	FROM	TO
How Do Students Learn?	Students learn in a linear fashion at the same rate.	Learning is uniquely individual to the student, non-linear, and based upon previous learning.
Impact	Instruction is teacher centered. Learning is passive. Desks are placed in neat rows. Students work individually, orderly and quietly. ecture is the primary mode of delivery. The distribution of student scores resembles the normal curve. Less than 10% do top quality work and failure is acceptable.	Instruction is tailored to the unique needs of the students.Learning is an active process. Arrangement of students from individual to group work changes continually throughout the day.Teachers are facilitators rather than dispensers of knowledge. All students meet or exceed performance standards.

Standards-based assessment systems that are used to inform instruction; require valid, reliable, generalizable tests; and provide immediate feedback to students and teachers cost more money. Typically, less than one percent of a district's budget is spent on assessment for accountability. Requests for increased funds must compete with other policy, process, practice, and program requests, such as wage and salary negotiations, new educational programs, changing curriculum and facilities. How stakeholders view the role of accountability assessment will determine how it is used and how it is financed. Table 6 contrasts the role of accountability assessment in traditional and standards-based systems.

Table 6

PROCESSES	FROM	TO
What Is The Role Of Accountability Assessment?	Data are not used for instruction since the tests are not accurate measures of the taught curriculum.	Accountability assessment serves as a valid and reliable measure of the content standards.
Impact	NRTs provide the best indicator of student learning given time and money. Tests and test scores are not valued by teachers or students.	Standards-based test data are an integral component in instruction. Test scores count and validate learning in the classroom. Teachers and students understand and value district accountability assessments

Traditionally, standardized norm-referenced tests (NRTs) have been used as the school and district accountability measure. While NRTs do an adequate job of comparing students to other students on basic skills, they do not measure student mastery of content standards. Depending on the definition of what students must know and/or be able to do established in content standards, NRTs may not be valid measures of the content standards. One factor contributing to the lack of validity of an NRT is the method of item selection. NRT items are selected based on their ability to make distinctions among students. Items missed or passed by most all students are not retained because they do not discriminate among students. Consequently, some content standards may not be measured. Emerging content standards offer schools, districts and states an opportunity to check the validity of the tests being used for accountability. Some parents, especially high socioeconomic status parents, value knowing that their student's performance compared well to the performance of other students. But what is the quality of the comparison? Since the test had no bearing on the students who participated in the norming sample, how much effort did those students give? What is the quality of performance at the fiftieth percentile or the ninety-sixth percentile? NRTs do not provide an answer. What does it mean when a student scores above XX percentile when compared to other students who did not care about the test? Schools and districts aiming for a score just above the mean may find the fiftieth percentile not a very worthy target.

If the accountability tests are to align with and measure content standards, criterion-referenced assessments (CRTs) that are valid, reliable and generalizable must be found or developed (Guskey, 1994). CRTs compare student performance to established criteria rather than to the performance of other students. CRTs allow all students who have acquired skills and knowledge to receive high scores. It is important to resolve the format of the district accountability test first, i.e., NRT or CRT, because non-alignment may still occur between district accountability assessments and classroom assessments.

Test formats

Test formats are another aspect of "processes." Table 7 contrasts processes involving test formats in traditional and standards-based assessment systems.

Table 7

PROCESS	FROM	TO
What Will Be The Test Format Of The Accountability Test?	**Test formats are generally the same, the fastest to administer and the easiest to score.**	**Test formats must be appropriate measures of the content standards and be affordable for the school, district or state.**
Impact	**The issue of validity is seldom raised or discussed. The tests are assumed to be valid.** **Establishing reliability on performance assessments is sacrificed for expediency.** **Single test formats are the rule.** **Standardization may or may not be used depending on the need to aggregate data.**	**There is a formal process for determining validity within the context of the content standards and budget.** **Formal reliability is a primary concernwhether or not high stakes are used.** **A variety of performances will be used depending on the content standards and budgetary parameters.** **Standardization is essential because data are disaggregated to ensure comparability and to gauge quality and equity**

Portfolios, performance assessment and authentic assessment are the current trend in student assessment. Machine scoreable, multiple choice formats, and tests that require the use of paper and pencil only have been criticized because they do not reflect practices in the "real world." However, there are "high stakes" multiple choice and paper and pencil formats that directly impact students and adults. The American College Test (ACT), Scholastic Achievement Test (SAT) and the Graduate Record Examination (GRE) are high stakes tests that use multiple choice and paper and pencil formats which college bound students face in the real world. Employers use paper and pencil tests as screening devices for employment which non-college bound students face in their real world. Paper and pencil and machine scoreable formats are just as authentic as other tasks performed in the real world.

The terms standardization and standardized norm-referenced test have come to mean the same thing, when in fact they are different. Standardization refers to the format and to administration procedures where all students in the comparison group take the same test under the same test administration procedures. The advantage of standardization occurs when scores are aggregated or disaggregated or when issues regarding equating tests are raised. It is more difficult to compare students to students or students to standards when formats and administration procedures vary. Standards-based assessments also can be standardized by administering the assessment in the same way to all students (Hymes, Chafin, & Gonder, 1991). Likewise, performance assessments, portfolios and criterion-referenced assessments can all be standardized if process and procedures are the same.

The first consideration in developing a test format is the content standard itself. For example, some content standards ask for pure recall of facts or knowledge. A knowledge-based, paper and pencil test is an excellent measure of content standards that ask for recall of facts. In contrast, content standards that focus on processes usually require a performance or demonstration. However, instances will occur when paper and pencil proxies might be used rather than performance assessments. These instances will occur when validity, reliability, generalizability or cost make the performance assessment prohibitive. In sum, a variety of assessment formats is desirable. Practices

In a sustainable standards-based assessment system, the practice element includes decisions about the number of performance levels, performance standards, and the role of classroom assessment.

Performance levels

The use of performance tasks as learning tools has become a popular method of integrating instruction and assessment. When a performance task is used, the quality of student performance is judged against a predetermined rating scale (rubric). Performance levels refer to the ranges of ratings of a performance task. Schools, districts and states use different performance rating schemes. Some states have two ratings: "pass" and "no pass." Others make finer distinctions about quality by using ratings that number from three to nine levels. The variety of rating levels reflects the many "practices" of schools and districts. Table 8 contrasts how traditional and standards-based systems approach performance levels.

Table 8

PRACTICE	FROM	TO
How Many Performance Levels?	The number of performance levels is viewed independently from reliability.	The number of performance levels must not compromise the reliability of the test.
Impact	A number of performance levels are designated below the performance standard so that growth can be shown when the student did not achieve the performance standard. Test reliability is not an issue.	Usually one performance level exists below the performance standard. Students are rewarded when they meet or exceed expectations. Test reliability is a critical issue.

Stakes also play a role in determining the number of performance levels. The percent of rater disagreements increases as the number of distinctions increases. Since high stakes systems require high inter-rater agreement, a lower number of performance levels is more effective. Four levels are a very common number of rankings. However, with any test, it makes little sense to report scores to students if the judgment is accurate only 50%, 60% or 75% of the time. High inter-rater agreement (reliability) is essential and is independent of the policy decision regarding stakes.

Performance standards

Another part of the practice element is the process for setting the performance standards. While the performance standards may be set in district policy, the process of setting performance standards is a practice. A performance standard defines the quality of an acceptable performance. One performance level frequently is selected as an acceptable level of performance or a performance standard. While the performance standard is the least acceptable performance, it should not be viewed as a "minimum competency," the concept used in the 1970s. Schools and districts have developed different terminology that indicates whether student performance meets or exceeds expectations for the level tested. Performance standards should set high but achievable expectations for students. Performance levels should not be set so low that everyone meets or exceeds the performance standard. In standards-based systems, the school/community stakeholders are invited to the table to set district expectations for graduation and for moving from one level of the system to the next. Who sets the performance standards is an important decision at the "practice" level of the system. Table 9 shows how traditional and standards-based systems approach this practice issue.

Classroom assessment

Classroom assessment is another component of the practice element. Classroom assessments play a critical role in a standards-based system. Teachers need tools to make minute-by-minute instructional decisions for each student. Checklists, portfolios, teacher observations, and teacher made tests or tasks are the teachers' primary assessment tools. While classroom assessments may not use the exact same items or tasks as the district level accountability tests, they should be measuring the same knowledge or skills in approximately the same format as the district accountability test. Alignment of both classroom

Table 9

PRACTICE	FROM	TO
Who Sets Performance Standards?	**Each teacher sets the performance standards for his/her classroom.**	**Setting performance standards is a public process which involves representatives from the entire school/ community.**
Impact	**Teachers set expectations for their classrooms individually.Ratings and expectations vary from classroom to classroom.** **Class grades mean different things.**	**Groups of people representing the school/community examine performances and set expectations for all students.** **Fixed clear targets are set for students to meet or exceed.**

assessments and district level accountability assessments with content standards is essential. At the "practice" element level, classroom assessments are aligned with content standards and district level assessments for accountability.

Classroom assessment is most effective if what gets taught gets tested; if classroom assessment is aligned with district level accountability assessment and content standards; and if all these are congruent with purpose, principles, policy and practice. Aligned classroom assessment enables the teachers to make instructional decisions for students on a continual basis. Classroom assessments allow students to practice skills from simple to complex and to integrate those skills in meaningful ways. Students must know what skills they currently have and what they are expected to do in order to meet or exceed the standard. Since classroom and accountability assessment are aligned, there is no time wasted preparing for tests that occur only in October or April.

Teachers enjoy more latitude in the formats classroom assessment can take when district level accountability assessments are legally defensible. Short and long term individual and group performances, projects and portfolios are better suited to classroom assessment than to district level accountability assessment. More time can be devoted to assessments that take longer than a class period as assessment becomes part of the instructional process. Student self-evaluation can play a substantial role in classroom assessment. However, students will be more successful on district level accountability assessments if the classroom assessments are similar in format (Herman, Aschbacher & Winters, 1992).

Many teachers favor the use of portfolios as an assessment tool. Portfolios do a great job of showing students, parents and teachers the progress a student has made over time. However, questions about reliability currently hinder the use of portfolios for assessments where decisions about promotion, retention or graduation are involved (Koretz, Klein, McCaffrey & Stecher, 1993).

The best evidence about a student's learning is collected and analyzed data from both sources: classroom assessments and district level accountability assessments. Once alignment has been established, assessment for accountability will only verify what students and teachers already know from classroom assessment. Table 10 shows how classroom assessment fits in traditional and standards-based systems.

Table 10

PRACTICE	FROM	TO
What Role Does Classroom Assessment Play In The Assessment Plan?	Classroom assessments are selected by each teacher and the scoring systems are unique to each teacher.	Classroom assessments are aligned with district accountability tests and content standards.
Impact	The teacher selects any form of assessment. The teachers use their own systems of ranking students. Decisions about promotion, retention, ranking, grades and graduation are assigned to the teacher(s).	A variety of classroom assessments are used, all of which align with accountability tests and standards. Common rating systems are used for evaluation. Decisions about promotion, retention, ranking, grades and graduation follow common formats.

Programs

Programs are the easiest organizational element to impact but represent the level that has the least impact on student achievement. Programs are those things that can be purchased and implemented as a unit. Curriculum materials and instructional strategies generally fall into this element of the organization. Traditionally, curriculum adoption followed a multi-year cycle. Each content area waited its turn to go through the adoption process. Money was allocated for the purchase of new texts and materials according to that schedule. In between adoptions, teachers would supplement the curriculum with their own materials. Teachers developed favorite units which might or might not fit with the district scope and sequence.

In the standards-based system, the development of curriculum and instruction occurs after consensus has been reached on content standards and after the format of accountability assessments has been determined. The purpose of curriculum and instruction is to provide the kinds of experiences that result in learning for each student such that all students meet or exceed performance standards (see Table 11).

Table 11

PROGRAM	FROM	TO
How Is The Curriculum Selected?	Cyclical textbook adoptions become the de facto curriculum.	Content standards and benchmarks determine what is taught.
Impact	One textbook series is used throughout the system.One textbook is used in a class. Since textbooks are written for California, New York, Texas and Florida, schools must choose the curriculum framework of those states.	No textbook, one or several texts may be used across the levels. Supplementary materials may be required for some students. Many different resources may be used in a class to meet the specific needs of individual students.Districts have more control over what students learn.

Procedures

Data management within the assessment system is part of the "procedures" element of the organization. The assessment system is directed by all of the previously described elements. Standards-based systems that use student data in the instructional decision-making process require data management systems that provide timely and accurate data about each student. Data management systems unable to provide data in "real time"—or to handle efficiently student transfers, new students, and students who have left the system—may need updating (see Table 12).

Table 12

PROCEDURE	FROM	TO
How Are Student Achievement Data Scored?	It is not necessary to have current district data available to teachers because the data do not impact instruction. Teachers keep the data they value to themselves.	All academic data from classroom and district level accountability assessments are important in making instructional decisions for students.
Impact	District level data storage can be on paper. No need for retrieval.No need for teachers to enter or access achievement data.	School and district-wide electronic networks are essential to store and retrieve achievement data. System must be teacher friendly, easy to enter and access data.

When to test

When to allow students to attempt or "challenge" a test is another "procedure." Standardized norm-referenced assessments require students to be tested in either the fall or the spring "norming window." These tests are designed on the premise of the normal curve where students' scores reflect a range of readiness. School improvement is gauged by increases in the mean or median percentile rank scores. In other words, if the mean student score was higher than the previous year, the school or district is believed to have done a good job.

Assessments that measure students against standards do not require all testing to be done on the same day. Students may formally challenge assessments "on demand" when the student and the teacher believe the student is ready to be successful rather than having all students test at the same time and on the same day. We know that all students are not ready on the same day or during the same week. Students will do much better if they can challenge the test/assessment when they are ready rather than when "we" are ready to test them. "On demand" assessment systems give the "when to test" decision to the teacher and the student (see Table 13).

Table 13

PROCEDURE	FROM	TO
When to Test?	Accountability tests are given during the norming window in the fall or spring. All Students take the test at the same time.	Standards-based tests are offered "on demand" when the teacher and the student believe the student will be successful.
Impact	All students test at the same time, ready or not. Since scope and sequence of the norm-referenced test usually does not match the curriculum, students often test on material they have not studied.	Students test when they are ready. Since assessments, curriculum and instruction are aligned with content standards, students test on what they have been taught.

When to score and report

Standardized norm-referenced tests are machine scored in the months following test administration. Scoring by the testing services takes approximately four weeks or more. It is not unusual for data to be available to teachers when the students are ready to leave school for the summer or when teachers return in the fall. Local scoring options have reduced the delay in returning data to teachers, but the volumes of paper generated are cumbersome and difficult for teachers to manage.

Standards-based systems that allow on-demand assessment require "real time" scoring systems. Scoring systems must be devised that provide immediate and continuous scoring and delivery of data to students, parents and teachers. Achievement data have the most instructional impact when they are available immediately.

These systems also allow students another chance to meet or exceed performance standards. If students are offered more than one chance, issues around alternative formats and testing intervals need to be resolved (see Table 14).

Table 14

PROCEDURE	FROM	TO
When To Score And Report?	Scoring may occur anytime after test administration. Reports are developed the next fall.	Scoring and reporting need to be continuously available to provide students, teachers and parents with current and accurate achievement data.
Impact	Scoring is done in bulk and is sent away for scoring by a service company .Reports may be given to the parents and teachers at the end of the school year or the following year.	Scoring systems must be developed locally to provide quick and accurate service and must automatically download into individual student data bases. Reports are returned to the students, parents and teachers within days of the challenge—in "real time."

Reporting formats

Teachers, students and parents want reporting formats that are easy to understand. They do not want reports they have to read and analyze. Standardized norm-referenced tests have met this need by use of one chart formats comparing the student's achievement to the national sample of other students on each of the basic skill areas. Similarly, new assessments need to provide parents with crisp and clear messages about what their children know, what they can do, and what they need to learn. Standards-based systems using combinations of text and graphic formats are easier for students, parents and teachers to understand (see Table 15).

Table 15

PROCEDURE	FROM	TO
How Are Reports Formatted?	A single chart that compares the student's score with national sample on basic skills.	An individual report for each content standard that compares the student's accomplishment against a performance standard.
Impact	One chart covers all basic skill areas. Student scores are compared to a norming sample.	One report for each content standard. Student accomplishments are compared to a performance standard.

Conclusion

The classroom, school, district and community are all interacting organizational systems. Within each system, organizational elements direct how the organization functions. Purpose is the core element. It is the most difficult to change and is protected by the other elements-principles, policies, processes, practices, programs, and procedures. However, changing the more central elements has the most dramatic and sustained impact on student achievement. More distant elements-processes, practices, programs and procedures-are much easier to change but have the least sustained impact on the system.

Standards present educators with an opportunity to make changes in the core elements of the educational system. However, initiatives that attempt to change the purpose, principles and policies of the organization will be purged unless the individuals in the system can be taken through a change process. Changing the culture of the school or district requires a commitment of time and energy to the change process. There is no magic bullet. There is no package that can be purchased that has sustained systemic impact. Teachers, administrators, parents, and other members of the school community have to value public education enough to be willing to do the hard work in the process of change. Only then will sustained high achievement for all students be attained.

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FairTest Examiner

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Summer 1997

Testing Our Children: Findings and Recommendations

FairTest based its evaluation of state assessment programs on the *Principles and Indicators for Student Assessment Systems.* The *Principles* were developed by the National Forum on Assessment to help guide assessment reform and have been signed by over 80 education and civil rights groups.

The major findings of *Testing Our Children: A Report Card on State Assessment Systems* include:

1) While most states now have content standards, many state tests are not based on their standards, and many important areas in their standards are not assessed.

2) Most states rely far too heavily on multiple-choice testing and fail to provide an adequate range of methods for students to demonstrate their learning. The results include not assessing important areas, creating the likelihood that those areas will not be taught. (Twenty-six states use all or almost all multiple-choice, and 18 use a majority of multiple-choice items.)

3) A majority of states (33) use norm-referenced tests, which compare students to a reference group and not to achievement on state standards. These tests fail to assess important areas of the standards and encourage grouping and instructional practices that historically have failed to provide many students with a strong education.

4) Most writing assessments require students to respond to a prompt (34 states), fostering and reporting a limited conception of writing. Writing must serve many purposes and therefore take many styles. A major problem here is the potential reduction of writing instruction to fit the state exam.

5) The state testing burden is often too heavy, with students repeatedly tested in the same subjects. A few states test students in almost every grade. For accountability purposes, such extensive testing is not necessary.

6) Seventeen states use a single test as a requirement for high school graduation, violating widely recognized standards for good assessment practice, ensuring unfair treatment of many students, and increasing the likelihood that narrow tests will dictate curriculum and instruction. Five more states are planning to use such tests. Districts also may use state tests as graduation or grade promotion hurdles.

7) Rich assessment techniques, such as portfolios and performance events, are rarely used by states. Thus, important areas of learning are not assessed and important signals are not sent to schools about what students should be learning and how assessment can support that learning.

8) Very few states use sampling for accountability, public reporting, and program improvement, even though this proven technique can provide accurate data, is less expensive and less intrusive, and allows greater use of portfolios and performance events.

9) Most states (32 of the 44 which responded to the FairTest survey) have bias review panels, often with significant authority to delete or revise items on state-made tests, though some still do not. These panels with strong authority are a positive development.

10) States tend not to adequately assess or include in state reports students with Individual Education Plans (IEP, e.g., "special education") and students with Limited English Proficiency (LEP). Inclusion of all students, using appropriate accommodations or alternate assessments as needed, is necessary for proper program evaluation and education for these students. The recently reauthorized federal Individuals with Disabilities Education Act (IDEA) will require all students with disabilities to be assessed appropriately, but such provisions do not exist for LEP students.

11) States are generally quite weak in providing adequate professional development in all aspects of assessment to teachers and other educators. Such teacher education, particularly in classroom assessment, is fundamental to assessment and broader school reform.

12) Few states evaluate teacher competence in assessment or study district, school and classroom assessment practices or their impacts. Thus, educators lack information to help improve the quality of assessment at all levels and to halt harmful practices.

13) Student and parent rights, such as the ability to review tests after completion, to challenge flawed items or to appeal scores, exist unevenly across the states. Such rights support fairness and help parents to better understand assessment and education in general and to view themselves as important partners in their children's education.

14) Public reporting and education about assessments are often limited. Furthermore, few states report in languages other than English, even if they have sizeable populations for whom English is a second language.

15) State reviews of their assessment systems need substantial improvement. Most do not study the impact of testing on curriculum, instruction, or graduation rates; and most do

not review whether their assessments measure the ability of students to think critically or in complex ways in the various subject areas. In an era in which testing is proposed as a fundamental tool for school reform, states often cannot even be sure whether increasing scores are based on real learning gains or teaching to the test.

Trends

Among the observed trends in state testing, based on *Testing Our Children* and other reports, were:

1) The amount of state testing has remained fairly steady over the past decade.
2) The number of states requiring or planning to require graduation tests declined in the early 1990s but is rising again. The figure had declined to 17 from a high of 23. Now, if the states planning such tests implement them, by early in the next decade the number will rise back to 22. Most such states are in the south and northeast.
3) States with graduation exit exams appear less likely to make use of performance assessments.
4) There is a heavy "southern effect" which includes high stakes testing, a heavy testing load, use of an NRT, and relatively less use of constructed-response and performance assessments. As a group, the southern states still comprise the nation's poorest region, so this is also a "poverty effect."

If it is true that using performance assessments signals or spurs a shift toward teaching and assessing more challenging, cognitively complex material, then the southern states will be left behind. As teaching to narrow tests also has been found to most powerfully affect schools with large proportions of minority-group and low-income children, such students in these states are particularly at risk of continuing to receive a low-level education that will not prepare them well for their adult lives. Students in large cities that also emphasize teaching to traditional tests face the same risk.

Recommendations

Despite these problems, the opportunity for reform is not over. A great deal has been learned, some of it from pioneering efforts in a few states, some of it in districts, most of it in schools and classrooms. What is lacking is not the technical know-how, though certainly problems remain, but the political and social will to recreate assessment as part of reinventing education.

If large-scale assessments are to support excellence and equity in education, the underlying conceptions and basic practices in most states need to be fundamentally changed to be brought into alignment with the *Principles and Indicators for Student Assessment Systems.*

Based on these findings, FairTest makes the following recommendations:

1) Base all state and district assessments of student achievement on clear standards.
2) Employ multiple methods of assessment, limiting multiple-choice to no more than one quarter of test-takers' scores.
3) Rely on methods that allow students to demonstrate understanding by applying knowledge and constructing responses while ensuring assessment of complex and critical thinking in and across subject areas.

4) Do not use norm-referenced tests, or limit their use to very light sampling.
5) Do not make high-stakes decisions, such as high school graduation, using single exams as a hurdle. Rely on multiple sources of information instead.
6) Employ sampling procedures to collect information on large populations, using performance and portfolio assessments, including sampling from classroom-based measures. This should include work which allows individual choices and expressions of knowledge and provides students the opportunity to evaluate their own work.
7) Enhance efforts to appropriately include all IEP and LEP students in assessments and reporting, along with reporting disaggregated data by important population groups.
8) Ensure adequate professional development in assessment, particularly in classroom and performance assessment, for in-service teachers and students in education schools.
9) Systematically involve teachers and other educators in developing and scoring performance assessments and portfolios.
10) Institute comprehensive reviews of assessment systems and use the results to improve assessments.

FairTest has also produced a paper on Implementing performance Assessments: A Guide to Classroom, School and System Reform by FairTest staff (FairTest, 1995: 56 pp.) . . . $6; 5 for $25; 10 for $40; 25 for $75; 50 for $125; 100 for $175 (http://www.fairtest.org/catalog.htm).

Concise guide for teachers, administrators and others interested in using performance assessments in their classrooms and school systems. Provides descriptions, examples and practical advice on projects, exhibitions, observations, interviews, performance exams and portfolios. Includes tips for getting started and extensive resource sections.

On-line Assessment Library at ERIC Clearinghouse on Assessment and Evaluation (http://ericae.net)

ERIC/AE Digests

Digests are short reports that synthesize research and ideas about emerging issues in education. They are designed to help members of the educational community keep up-to-date with trends and new developments. ERIC Digests are in the public domain and may be freely copied and distributed. Each digest goes through several rounds of editing and review and are about 4 pages long, 10–15K bytes. In 1996, ERIC/AE distributed over 150,000 copies of ERIC Digests.

You can also search the ERIC Digests Online Database (http://ericae.net/search.html#Dig) and check papers related to assessment and counseling (http://www.uncg.edu/~ericcas2/assessment/toc_assessment.html) sponsored by the ERIC Clearinghouse on Counseling and Student Services. The following ERIC Digests represent a sample of what is available at this site.

On-line Assessment Library at ERIC Clearinghouse on Assessment and Evaluation

Emerging Student Assessment Systems for School Reform

Roeber, Edward (http://ericae.net/edo/ed389959.htm)

Introduction

Currently, much discussion is taking place about the quality of American schools, the skills needed by students, and the ways we should be assessing these achievements. Student assessment is viewed nationally as the pivotal piece around which school reform and improvement in the nation's schools turn. For example, student assessment is the key piece of Goals 2000, as well as other federal legislation such as the Elementary and Secondary Education Act (ESEA).

The result is that substantially more assessment is likely to occur in our nation's schools, and to take place in areas traditionally not assessed (such as the arts), using assessment strategies (such as performance assessments and portfolios) not typically used. States and local districts are reconsidering the models for systems of assessment and how assessment at the state and local levels can be coordinated to achieve the reforms desired in education.

Why is school reform occurring?

Widespread belief that schools are not helping all students achieve at the levels that are needed, has spurred efforts to reform our schools. Concerns have been raised that the ways we teach students, as well as assess them, do not lead students to acquire needed knowledge or skills, nor help them apply and use their knowledge and skills appropriately. At the national and state levels, content standards containing the types of knowledge, skills and behaviors now believed needed for all students to achieve at high levels are being developed. Starting with such efforts as the National Council of Teachers of Mathematics' Curriculum and Evaluation Standards for School Mathematics (NCTM,1989), content standards are being developed in the arts, civics, economics, English, foreign languages, geography, health education, history, physical education, science, and social studies.

School reform is also motivated by the belief that there are competencies needed for graduates to enter the workforce successfully. The Secretary's Commission on Achieving Necessary Skills developed generic competencies and foundation skills that all workers will need in the future (U.S. Department of Labor, 1991). They include flexible problem solving, respecting the desires of the customer, working well on teams, taking responsibility for one's own performance, and continuous learning and have been developed to guide the efforts of educational reform in the direction helping more students to make the transition to work successfully.

Collectively, these standards represent substantial challenges for the American schools. They imply that all students will need to achieve at much higher levels. New strategies for assessment are also implied by these content standards.

How does reform of assessment fit school reform?

Student assessment is at the top of the list of things to tinker with by policymakers at the national and state levels, since it is viewed as a means to set more appropriate targets for students, focus staff development efforts for the nation's teachers, encourage curriculum reform and improve instruction and instructional materials in a variety of subject matters and disciplines (Darling-Hammond & Wise, 1985). Assessment is important because it is widely believed that what gets assessed is what gets taught, and that the format of assessment influences the format of learning and teaching. (O'Day & Smith, 1993). The hope of policy makers is that changes in assessment will not only bring about the needed changes in students, but also in ways schools are organized (Linn, 1987, Madaus, 1985). Interest in performance assessment has also been justified on the basis that using such measures will promote educational equity (National Center on Education and the Economy, 1989). Student assessment carries a heavy load these days.

Of course, outside pressure external on testing programs can be ignored or resisted by local educators (Smith and Cohen, 1991). There is also ample evidence of the distortions in teaching that external testing programs can create (Shepard & Smith, 1988). Rather than encourage reform of teaching, inappropriate teaching to the test may occur (as opposed to teaching to the domain covered by the test). Rather than creating opportunities for all students to learn to high levels, even new forms of assessment may lead to tracking and limiting opportunities for some students (Darling-Hammond, 1994; Oakes, 1985.)

Assessment reform should occur along with professional development, instructional development, and other strategies designed to assure that all of the changes are mutually supported. Coordination of assessment reform at the national and state levels with assessments at the local level is also important, so that each will present a coherent view of student performance, not simply be "stuck" together.

Types of Assessments

New content standards may require different assessment methods. Among the assessment techniques now being considered are short-answer, open-ended; extended-response, open-ended; individual interviews; performance events; performance tasks in which students have extended time; projects; portfolios; observations; and anecdotal records, in addition to multiple-choice exercises. A broader repertoire of techniques is increasingly being used.

School Improvement Strategies

The information about student achievement needed at various levels of the educational system is different. Parents have different needs that teachers, who in turn, have different needs than school principals. District administrators need broader, system-wide information, while at the state level, there is concern about equity across districts and identification of state priorities. Nationally, policy makers are concerned about differences between states and how competitive American students are with their peers in other countries.

Improving student achievement can take place at each of these levels. Teachers work with an individual student in a classroom, or revamp classroom-wide instruction based on an assessment. At the school level, educators use school information to set long-and-short-range objectives and decide how to accomplish these. At the district level, educators target particular areas of the curriculum for attention. At the state level, incentives for improving instructional programs may be most important. School reform occurs at all levels of the educational system.

Useful Assessment Designs

Typically, student achievement is measured with available student test data, often using information from district or state testing programs. Information collected less formally in classrooms is not typically included in school improvement plans, even though such information could provide valuable insights into student learning.

The nature of information needs should form the basis for an assessment design. In a top-down model, policymakers develop an assessment design that meets their needs, hoping the data may be useful by persons at lower levels. An alternative is to build the assessment system needed at the local level, aggregating the information upwards to the district, state and national levels.

Another model, based on the assumption that multiple approaches will allow different users' needs to be met, is to develop a comprehensive assessment system using different assessment formats to meet different users' needs. Various assessment strategies can be implemented together at the different levels to provide for the different information needs in a coordinated, coherent manner (Darling-Hammond, 1994).

For example, local districts can adopt a portfolio system for improving instruction, while the state carries out matrix-sampling across important standards. The information collected by the state can become part of the student's portfolio, thereby strengthening the portfolio's quality. The state could also provide opportunities for teachers to learn to score the open-ended written and performance assessments, thereby enhancing teachers' capabilities of observing and rating student performances in their classrooms.

In this case, the elements of the system at the different levels build on and support the elements at other levels. It is also anticipated that information collected at the different levels can be reported in a more understandable manner, since the same standards apply in different ways. This assessment model enhances the reforms of schools so many desire.

Summary

This is indeed a time when American schools are being challenged to provide opportunities for students to achieve at much higher levels. Assessment is viewed as one of the essential elements in assisting schools to address the standards now deemed to be important in a manner that will help all students to achieve them. The major challenge for assessment is to implement these additional assessments in a coordinated manner so that the amount of assessment is supportive of the changes needed, not overly burdensome to teachers or students. Models for coordination assessment at the state, district and classroom levels appear most promising.

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Guidelines for the Development and Management of Performance Assessments

Edward D. Roeber/Council of Chief State School Officers

(http://ericae.net/digests/tm9604.htm)

This digest is based on time proven guidelines developed for use in training workshops for state and local educators to outline the processes by which performance assessments could be created, validated, and used in large-scale assessment. The term performance assessment as used in this digest is reserved primarily for those assessments that go beyond paper-and-pencil, group-administered assessments. This type of assessment is an important and unique tool available for measuring student performance at the state or local level.

These guidelines are provided to offer guidance to district and state policy makers and assessment directors concerning some of the issues of managing the development, administration, and use of performance assessments in large-scale assessment programs. The following sections present information about how performance assessments can be developed, administered, scored, and reported. The paper suggests informal, less costly means to develop and use these types of measures. However, some of the uses outlined above might require the use of external contractors or technical advisors.

Pre-Assessment Development Activities

Before assessment development can or should occur, several important planning activities must set the stage for assessment. These steps take place at the outset to insure that the assessment is developed in a manner that fits the content area to be assessed and is within the resources available. These steps include the development of the assessment framework, creation of the assessment plan, determination of assessment resources, and production of the assessment blueprint.

The framework for the assessment serves as the guide to the entire assessment. This consists of the assessment objectives. It is from the framework that the assessment is developed. There are many ways to determine these objectives. The traditional manner in which to do this is to gather a group of content area experts and classroom teachers and ask them to indicate what students should know and be able to do by the end of certain points of instruction. However, an alternate procedure is to allow the framework of expectations to evolve out of research and practical experience of educators on what outcomes students are capable of at particular times in their school career.

The assessment plan provides an overview and description of the types of assessment to be developed and used, as well as the manner in which assessments will be implemented. The plan serves the useful purpose of describing the types of assessments that are envisioned and how assessments will be administered, scored, and reported. The assessment plan should force the agency sponsoring the assessment development to carefully consider the resources needed and available in order to make decisions about the assessment at the outset. Once the assessment plan has been written and the assessment resources have been determined, it is possible to make any adjustments needed in the assessment plan.

The blueprint will describe the characteristics of an adequate assessment for each content area of the assessment framework as well as the characteristics of an adequate assessment for each student outcome. Once completed, this should guide the development of the assessments that are needed given the resources available. The final step in the pre-assessment development activities is for the assessment plan and the assessment blueprint to be approved by the sponsoring agency and any additional advisory groups or individuals.

Assessment Development Steps

After the blueprint has been created, it is time to formulate the assessment prompts. Throughout this process the developer must consider several things. These include: 1) in what manner should the assessment questions or instructions be presented to the student, 2) what additional stimulus materials will be needed, 3) how the students will respond and how such responses will be recorded and scored, 4) what criteria will be used to judge student responses, 5) the number of scale points for scoring student responses, and 6) samples of each level of response.

Once the exercises have been written, the next step is to edit them. This is an important step in assuring that the exercise and assessment administration processes are understandable, that the exercise warrants the special time and attention which performance measures require, and that there is consistency among the performance exercises. The editor also can check to ensure that the stimulus materials fit with the exercises.

One of the more difficult aspects of performance exercises is writing the assessment administration directions. Many performance exercises are administered to students individually or in small groups. These exercises require the assessment administrator to set up a standard situation to which each student can respond, as well as, to read a standard set of directions to each student. Developing standard assessment administration directions that are complete and accurate is usually the result of trying the exercise out one or more times and noting areas of students confusion, responses that students provided which are vague or incomplete, and ways in which some or all of students responded that were not anticipated. If a majority of student responses indicate that the assessment instrument is ineffective, considerable restructuring of the testing tool may be in order before any further testing of the instrument is completed.

Once the sample student responses are gathered, someone needs to review the responses and attempt to score them according to the criteria and preliminary scoring guide developed by the exercise writer. After the initial work on the scoring guide is complete, an expert panel of judges should be convened. This panel should be asked to review each exercise, confirm the preliminary judgements for each score scale point, and discuss those student responses that did not appear to be scorable according the preliminary scoring guide. This panel may note changes that needed to be made in the assessment administration process. Following the institution of these changes, the new test should be retested and reviewed by the panel for final approval.

Preparation for Assessment Administration

The next important set of activities is getting ready for the actual assessment. This involves selecting the schools that will participate, preparing the schools for participation in the assessment, and training the individuals who will gather the data from students.

Since the assessment materials which have been developed and refined are intended for large-scale assessment use, it is presumed that the exercises will be given to some or all of the students at one or more grade or age level. The original assessment plan will help to determine how and to whom the exercises will be administered. This information will aid in the decision of which schools are selected to participate in the standardized performance-based assessment. Letters of notification should be sent to the school coordinator and to the district coordinator if applicable. These letters should include such details as when the assessment will occur, what will be involved in the assessment, what the schools responsibilities will be, who will administer the test, and so forth.

A major key to the success of the entire performance assessment project is the quality of the individuals who are chosen to conduct the assessment. After the selection process for new assessment administrators has taken place, training should occur. When the assessment administrators are comfortable with the administration of the tests and the manipulatives and equipment that are used in them, the focus of the training is to shift to recording and scoring of responses. Trainees with acceptable scoring prowess will be certified as assessment administrators; others must be either cycled back through more training or dismissed from the assessment project.

Assessment Administration

Once the assessment administrators are trained, they also should contact the appropriate assessment coordinators. The purpose of this contact is to schedule the date(s) and times for the assessment administration to occur, to remind the school coordinator to have a complete listing of students at the appropriate grade level(s) available on assessment day, and specify what facilities and equipment will be needed.

After all contacts have been made, the field assessment administrators can begin the process of assessment administration. This will start with the drawing of the sample of students to be assessed and a list of alternates. It may be helpful to have the school assign an aide or a student who can work with the assessment administrator to locate the students when needed for the assessment and bring them to the assessment administration site.

It will also be most helpful if the designated contact person and others associated with the project but not involved directly in the assessment administration would select some schools in which to observe one or more students taking part in the performance assessment. In addition to observing the assessment administration, these people can also discuss the assessment with some of the students following the assessment. This can provide valuable insight on why and how students responded and their motivation and interest in the assessment.

Post-Assessment Administration Activities

Various student responses are selected by an expert in the area to represent the different types of responses that students may have given. Such expert judgements are next confirmed by an expert panel of judges; some of the sample will appear in the scoring guide prescored and will be used to train the scorers. The others will be used to judge the accuracy of the scorers following the initial training.

The scoring process requires a number of things to be prearranged for the scoring to flow smoothly. First, a determination would have to be made about whether there will be one or two scorers for each response. Second, arrangements will need to be made to distribute booklets and other materials to be scored, plus rating sheets, to each of the scorers. Third, routine reliability checks should be built into the scoring process.

The various scores need to be summarized and prepared for reporting. The summaries will be most efficient if the individual(s) who will be doing the reporting and those people directing the scoring discuss the needed and desired data summarization process before the scoring is conducted. One thing to keep in mind when reporting the data is that typical audiences are most interested in knowing how well students performed, why students performed as they did, if the experts were surprised in any way by the level or types of student performances, and what the experts believe needs to be done to help students improve.

Conclusion

While performance assessment may be new to some people, it is not new nor is it untried. National and statewide performance assessments were successfully conducted in a reliable and cost-efficient manner decades ago. As this guide has illustrated, performance assessment is feasible and manageable. Such assessments are vitally needed in the assessment landscape so that those interested in assessing what students are capable of doing have access to more complete information on student performance. Although the steps are more complex and more involved, such assessments are important in the determination of what skills our students need to have and whether or not they do in fact have them. Performance assessment is an important adjunct to overall large-scale assessment strategies.

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Creating Meaningful Performance Assessments. ERIC Digest E531.

Elliott, Stephen N.

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Performance assessment is a viable alternative to norm-referenced tests. Teachers can use performance assessment to obtain a much richer and more complete picture of what students know and are able to do.

Defining Performance Assessment

Defined by the U.S. Congress, Office of Technology Assessment (OTA) (1992), as "testing methods that require students to create an answer or product that demonstrates their knowledge and skills," performance assessment can take many forms including:

- Conducting experiments.
- Writing extended essays.
- Doing mathematical computations.

Performance assessment is best understood as a continuum of assessment formats ranging from the simplest student-constructed responses to comprehensive demonstrations or collections of work over time. Whatever format, common features of performance assessment involve:

1. Students' construction rather than selection of a response.
2. Direct observation of student behavior on tasks resembling those commonly required for functioning in the world outside school.
3. Illumination of students' learning and thinking processes along with their answers (OTA, 1992).

Performance assessments measure what is taught in the curriculum. There are two terms that are core to depicting performance assessment:

1. Performance: A student's active generation of a response that is observable either directly or indirectly via a permanent product.
2. Authentic: The nature of the task and context in which the assessment occurs is relevant and represents "real world" problems or issues.

How Do You Address Validity In Performance Assessments? The validity of an assessment depends on the degree to which the interpretations and uses of assessment results are supported by empirical evidence and logical analysis. According to Baker and her associates (1993), there are five internal characteristics that valid performance assessments should exhibit:

1. Have meaning for students and teachers and motivate high performance.
2. Require the demonstration of complex cognition, applicable to important problem areas.
3. Exemplify current standards of content or subject matter quality.
4. Minimize the effects of ancillary skills that are irrelevant to the focus of assessment.
5. Possess explicit standards for rating or judgment.

When considering the validity of a performance test, it is important to first consider how the test or instrument "behaves" given the content covered. Questions should be asked such as:

- How does this test relate to other measures of a similar construct?
- Can the measure predict future performances?
- Does the assessment adequately cover the content domain?

It is also important to review the intended effects of using the assessment instrument. Questions about the use of a test typically focus on the test's ability to reliably differentiate individuals into groups and guide the methods teachers use to teach the subject matter covered by the test.

A word of caution: Unintended uses of assessments,can have precarious effects. To prevent the misuse of assessments, the following questions should be considered:

- Does use of the instrument result in discriminatory practices against various groups of individuals?
- Is it used to evaluate others (e.g., parents or teachers) who are not directly assessed by the test?

Providing Evidence For The Reliability And Validity Of Performance Assessment

The technical qualities and scoring procedures of performance assessments must meet high standards for reliability and validity. To ensure that sufficient evidence exists for a measure, the following four issues should be addressed:

1. Assessment as a Curriculum Event. Externally mandated assessments that bear little, if any, resemblance to subject area domain and pedagogy cannot provide a valid or reliable indication of what a student knows and is able to do. The assessment should reflect what is taught and how it is taught.

   Making an assessment a curriculum event means reconceptualizing it as a series of theoretically and practically coherent learning activities that are structured in such a way that they lead to a single predetermined end. When planning for assessment as a curriculum event, the following factors should be considered:

   - The content of the instrument.

- The length of activities required to complete the assessment.
- The type of activities required to complete the assessment.
- The number of items in the assessment instrument.
- The scoring rubric.

2. Task Content Alignment with Curriculum. Content alignment between what is tested and what is taught is essential. What is taught should be linked to valued outcomes for students in the district.

3. Scoring and Subsequent Communications with Consumers. In large scale assessment systems, the scoring and interpretation of performance assessment instruments is akin to a criterion-referenced approach to testing. A student's performance is evaluated by a trained rater who compares the student's responses to multitrait descriptions of performances and then gives the student a single number corresponding to the description that best characterizes the performance. Students are compared directly to scoring criteria and only indirectly to each other.

   In the classroom, every student needs feedback when the purpose of performance assessment is diagnosis and monitoring of student progress. Students can be shown how to assess their own performances when:

   - The scoring criteria are well articulated.
   - Teachers are comfortable with having students share in their own evaluation process.

4. Linking and Comparing Results Over Time. Linking is a generic term that includes a variety of approaches to making results of one assessment comparable to those of another. Two appropriate and manageable approaches to linking in performance assessment include:

   - Statistical Moderation. This approach is used to compare performances across content areas for groups of students who have taken a test at the same point in time.
   - Social Moderation. This is a judgmental approach that is built on consensus of raters. The comparability of scores assigned depends substantially on the development of consensus among professionals.

How Can Teachers Influence Students' Performances?

Performance assessment is a promising method that is achievable in the classroom. In classrooms, teachers can use data gathered from performance assessment to guide instruction. Performance assessment should interact with instruction that precedes and follows an assessment task.

When using performance assessments, students' performances can be positively influenced by:

1. Selecting assessment tasks that are clearly aligned or connected to what has been taught.
2. Sharing the scoring criteria for the assessment task with students prior to working on the task.

3. Providing students with clear statements of standards and/or several models of acceptable performances before they attempt a task.
4. Encouraging students to complete self-assessments of their performances.
5. Interpreting students' performances by comparing them to standards that are developmentally appropriate, as well as to other students' performances.

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National and State Perspectives on Performance Assessment. ERIC Digest E532.

Thurlow, Martha

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As a result of educational reform efforts over the past 2 decades, large scale assessment is being reconfigured with an emphasis on performance approaches. Unlike traditional multiple choice tests, performance assessments require students to create an answer or product that demonstrates their knowledge and skills. For students receiving special education services, issues involving inclusion and the provision of adequate accommodations emerge when national and state authorities use performance assessments to monitor the educational system.

Infusing Performance Assessment Into National Programs

The United States has a comprehensive assessment program at the federal level that tracks students' knowledge and skills over time. Performance based items are finding their way into national assessment systems.

1. National Assessment of Educational Progress (NAEP). Known as the U.S.'s national "report card," the NAEP surveys students' educational achievement across time. In 1992, NAEP began experimenting with constructed-response items—a type of perfor-

mance assessment—in the subject areas of mathematics and reading. For example:

Grade 8: (Student reads and uses an actual bus schedule that includes tables, maps, and text.) Monthly bus passes are not valid on which routes?

Grade 8: (Student reads two passages from the Oregon Trail, one an informational account of the Trail and the other a narrative piece based on a diary entry.) Pretend that you are a young adult of the 1840s who has caught a case of "Oregon fever." Use information from both passages and from your own knowledge to explain what you would do about Oregon fever and why.

2. National Adult Literacy Survey (NALS). As administered in 1992, NALS assessed adult literacy skills. Literacy tasks involving materials that adults typically encounter in their daily activities were built into the assessment.

   How Have Students Receiving Special Education Services Fared On The Naep And Nals? Inclusion in the national data collection programs as a whole will enable students to be included in national assessments that use performance-based measures. Unfortunately, about 50% of students with disabilities are typically excluded from participating in national assessments. Why is this so?

   - Guidelines are exclusive: It is questionable whether the guidelines themselves result in high exclusion rates. For example, NAEP guidelines allow students to be excluded if the student is mainstreamed less than 50% of the time in academic subjects and is judged to be incapable of taking part in the assessment.
   - Accommodations are not available: Neither the NAEP or the NALS allow any accommodations or adaptations to be made for individuals who need them in order to participate meaningfully in the assessment.

Overall, school officials hesitate to include students with disabilities into high-stakes testing situations for obvious reasons. Without a guarantee that all districts are using the same guidelines to make exclusion/inclusion decisions, and without sensitivity to the individual needs of students that impede their success in testing situations, it is questionable whether districts will actively insist on including all students. However, at this time, a number of special educators are calling for national officials to study the best way that students with disabilities might be included in such assessments.

Suggestions For Increasing The Participation Of Students With Disabilities In National Assessments

The use of performance assessments in national data-collection programs has been relatively narrow in scope; however, there is some evidence that assessment programs that have been inclusive of students with disabilities in the past (i.e., traditional assessments), tend to be inclusive of students in performance assessments. Key aspects to promoting participation of students with disabilities in large-scale assessments include:

- Clarification of guidelines for exclusion/inclusion, covering guidelines related to test development, testing, and reporting of results.
- Use of reasonable accommodations, adaptations, and other modifications in assessment procedures (i.e., ones that would not threaten the technical adequacy of an assessment, such as using an interpreter for a student with a significant

hearing impairment to give directions that are typically given orally).

- Monitoring of participation levels.
- Research on the effects of various modifications in assessments (including the use of different types of performance assessments) on the performance of students with disabilities and on the technical characteristics of the instruments.

Infusing Performance Assessment Into State Programs

Some 38 states are currently using or considering using some form of performance assessment in their statewide testing programs. Categories of assessment items include:

- Enhanced multiple-choice.
- Short-answer open-ended.
- Extended-response open-ended.
- Interview.
- Observation.
- Individual performance assessment.
- Group performance assessment.
- Portfolio or learning record.
- Project, exhibition, demonstration.

The content areas most typically targeted for performance assessment are writing, mathematics, and reading.

How Have Students Receiving Special Education Services Fared On Statewide Assessments?

The same problems found at the national level of excluding students with disabilities are also apparent at the state level. Complicating this situation is the fact that many states have no formal means in place for determining the extent to which students with disabilities were included in assessments or for isolating the data of students with disabilities from that of other students.

Presently, there is an effort in the states to quantify the number of students who are exempted or excluded from participation in the assessment, and to monitor closely the appropriateness of such exclusions.

Suggestions For Increasing The Participation Of Students With Disabilities In Statewide Assessments

As new performance-based approaches are incorporated into state assessment programs, it is important to discern what it will take to ensure high participation of students with disabilities. States can:

1. Include students with disabilities in pilot tests. Keep data according to which students participated in the assessment, their category of disability, and their success.

2 Plan accommodations and adaptations for use by students with disabilities during the assessments.

   - Modify the presentation format—e.g., use a Braille version of the assessment; use an interpreter for a student with a significant hearing impairment.
   - Modify the response format—e.g., allow the student to produce the answers orally rather than in written form.
   - Modify time and scheduling—e.g., give the student more time to complete the assessment.
   - Modify the setting—e.g., have the student complete the assessment in a quiet area apart from other students.

   Refer to the student's IEP for specific accommodation strategies.

3. Consider equity issues (race, class, culture, gender biases) in crafting the assessments. Equity can become an issue when the performance tasks are within the experience of certain populations and not others. For example, consider the following example that recognizes the complications of disability: "Asking students to write about learning a sport, which is biased against those students whose disabilities, geographic location, or economic status have prevented them from learning a sport."
4. Monitor participation levels. Build in an accountability model that investigates consistently high levels of exclusion.
5. Clarify guidelines for exclusion and inclusion. Determine how results will be reported.

At the very least, states can make a commitment to include students with disabilities from the very start.

Although it is too early to tell if the use of performance assessments will result in greater participation of students with disabilities in statewide assessment programs, we can only hope that states will use this heightened interest as an opportunity to improve the educational experience for these students.

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Approaching Standards for Mathematics Assessment. ERIC/CSMEE Digest.

Brosnan, Patricia A.; Hartog, Martin D.

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It is acknowledged that the typical mathematics curriculum of a generation ago emphasized teaching facts, standard procedures, and skills to groups of passive recipients. In the last decade, a more integrated, child-centered curriculum presented to more active, participating students has emerged in response to deteriorating public confidence in the quality of American education. However, curriculum, designed on the finest principles with the very best intentions, effects no change in classroom practice if assessment procedures remain the same National Council of Teachers of Mathematics (NCTM), 1989; Mathematical Sciences Education Board & National Research Council (NRC), 1993. Realizing this, the mathematical community is addressing multiple challenges to articulate and implement effective standards in the key areas of testing, assessment, and accountability. American students are subjected to a variety of tests, usually standardized, multiple-choice tests, from kindergarten to graduate school. Such tests are, according to widely held beliefs, inhibitors to change and improvement in education—especially in mathematics (MSEB & NRC, 1993). To make assessment instruments agents of change rather than preservers of the status quo, there are several major issues that must be addressed:

- Are current assessment practices and reporting methods problematic?
- What guiding principles should the mathematics community uphold when revamping assessment practices?
- Will alternative assessment methods really make a difference?
- Should use of alternative assessments be mandated?
- Should technology be available at all times? With these issues emerge problems such as:
- How can assessment be designed equitably?
- Do all students have equal access to technology?
- How can standards be implemented nationally?
- Who will assess the assessment process? Who will enforce the standards?
- What needs to be done to convince teachers to change?

What Makes Current Assessment Practices And Reporting Methods Problematic?

States and districts providing leadership in American education have identified the lack of shared standards for student achievement and good methods for assessment as the greatest obstacles to creating high performing schools. It is all too clear that current tests used for assessment of educational performance fail to measure adequately progress toward national standards (MSEB, 1993). This is especially true in mathematics, where curriculum and teaching standards recommended by the NCTM reflect broad nationwide consensus.

The new curriculum Standards call for an instructional setting that is very different from the classroom settings of the past. The curriculum combines new as well as traditional mathematical topics. Mathematics is presented to students in the form of rich situational problems that actively involve the students. Nonetheless, commonly used tests continue to stress routine, repetitive, rote tasks instead of offering children opportunities to demonstrate the full range of their mathematical power, including such important facets as communication, problem solving, inventiveness, persistence, and curiosity (MSEB, 1993).

Traditionally, instruction has been driven by the curriculum, but assessment has not been an effective part of a feedback loop linked to instruction. Assessment is most valuable when it is an integral part of teaching, not merely a tool for ranking students, but a mechanism for influencing instruction. To realize the full potential of the assessment process requires that the profession develop and implement assessment tasks to measure student productivity and performance on tests that require mathematical thinking (Pandey, 1990).

For too long teachers have been "teaching the test," students have been most interested in learning what will be on the test, and administrators have gauged progress from the results of these tests. If administrative personnel continue to demand and value static scores, teachers will continue to gather the type of data needed to make such a limited report. So, to change assessment practices, administrators must change what is required on reporting mechanisms.

What Guiding Assessment Principles Should The Mathematics Education Community Uphold?

A National Summit on Mathematical Assessment was held 23–24 April 1991 (MSEB, 1991). From the summit emerged a consensus that the evaluation standards of the NCTM Curriculum and Evaluation Standards for School Mathematics (1989) must be expanded. The following list of principles and goals for mathematical assessment was developed to guide the proposed expansion.

Principles

1. The primary purpose of assessment is to improve learning and teaching.
2. The primary use of results of assessment is to promote the development of the talents of all people.
3. The content of assessments is derived from the consensus of the discipline.

Goals

1. Assessments will be aligned with the mathematical knowledge, skills, and processes that the nation needs all of its students to know and be able to do.
2. Assessment practices will promote the development of mathematical power for all students.
3. A variety of effective assessment methods will be used to evaluate outcomes of mathematics education.
4. Adequate accountability systems will be used to assess mathematics.
5. Guidelines will be developed for judging the quality of all forms of mathematics assessments.

6. Mathematics teachers and school administrators will be proficient in using a wide variety of assessment methods for improving the learning and teaching of mathematics.
7. The public will become better informed about assessment and assessment practices (Mathematical Sciences Education Board, 1991, pp. 16–19).

As a result of this summit, the National Center on Education and the Economy (NCEE) based in Rochester, NY and the University of Pittsburgh Learning Research and Development Center (LRDC) were charged with the task of developing The New Standards Project. This Project team would produce standards for assessment that would align with previous standards in curriculum and teaching in mathematics, as well as in other academic disciplines. These standards will emphasize the ability to think well, to demonstrate a real understanding of subjects studied and to apply what one knows to the kind of complex problems encountered in life. The New Standards Project system will employ advanced forms of performance assessment, including portfolios, exhibitions, projects and timed performance examinations, all based on the use of real-life tasks that students are asked to do alone and in groups. Some tasks can be completed in minutes, but others will take weeks or even months. The first valid, reliable, and fair exams will be available for use in mathematics by 1994.

The goal is not simply to measure student performance, but to improve it significantly. The following principles, developed by the New Standards team, provide the framework from which the new assessment standards will emerge.

Principles

1. It is possible to have an educational system that is both equitable and excellent.
2. Student performance standards and assessment systems will be designed to help bring all groups of students to high levels of performance.
3. Children should not be denied the right to a first-class education because they go to school in one state rather than another or in one school district rather than another.
4. The standards set will emphasize thinking and students' capacities to use what they know outside a school setting.
5. Although the standards will be uniform, schools will be free to use very different methods to help students achieve the new standards through a variety of means that will enable them to take advantage of the strengths of their backgrounds and experiences.
6. Standards will be set through a public process that engages all sectors of society throughout the nation.
7. Assessments will be deliberately designed as targets for instruction and learning.
8. Teachers and content specialists will be actively involved in developing, grading, and interpreting the assessments.
9. Students, parents, and teachers must be convinced that competence as demonstrated on the assessments will lead to real opportunity for further education and jobs with advancement prospects (The National Center on Education and the Economy, 1991, pp. 9–10).

Standards for Teacher Competence in Educational Assessment of Students were concurrently developed by the American Federation of Teachers (AFT), the National Council on Measurement in Education (NCME), and the National Education Association (NEA) (1990) requiring that:

1. Teachers should be skilled in CHOOSING assessment methods appropriate for instructional decision.
2. Teachers should be skilled in DEVELOPING assessment methods appropriate for instructional decisions.
3. Teachers should be skilled in ADMINISTERING, SCORING, and INTERPRETING the results of both externally-produced and teacher-produced assessment methods.
4. Teachers should be skilled in USING assessment results when making decisions about individual students, planning teaching, developing curriculum, and school improvement.
5. Teachers should be skilled in DEVELOPING valid pupil grading procedures which use pupil assessments.
6. Teachers should be skilled in COMMUNICATING assessment results to students, parents, other lay audiences, and other educators.
7. Teachers should be skilled in RECOGNIZING unethical, illegal, and otherwise inappropriate assessment methods and use of assessment information. (pp. 3–5)

With these teacher competence standards and the proposed assessment standards on the horizon, the question must be raised, "Will alternative assessment methods really make a difference?"

What Do Early Research Results Suggest About Alternative Assessment?

Large scale assessment programs are beginning to assign assessment tasks in which groups of students work collaboratively to solve problems or complete projects. Research results show that, in the group setting, performance is much better than in the individual setting. While the data provide important insights into students' mathematics skills and their behavior in cooperative groups, little is known about the validity of data from group assessment for making inferences about the competence of individual students (Webb, 1992).

The effects of portfolio assessment on mathematics students' attitudes about grades, their awareness of their mathematical strengths and weaknesses, and their ability to set reasonable goals were studied. Results suggest that portfolio assessment might help students see their strengths and weaknesses so that they are more able to link successes and failures to performance. Portfolio assessment might also facilitate goal setting (Owings & Follo, 1992).

Results of innovative assessment indicate that some students performed surprisingly well and were able to explain concepts in detail. If a question was rephrased, students were able to do very well explaining a problem in contrast to drawing a blank on traditional tests. Others did not do as well as expected, demonstrating an inability to explain concepts, and relying on memorized facts and simple computation (Lehman, 1992).

In response to the call for assessment reform, many states such as California, Connecticut, Vermont, Kentucky, Virginia, and Ohio have been experimenting with alternative forms of assessment on a statewide basis and early reports include similarly promising results. Likewise, on a national level, the Educational Testing Service, the National Assessment of Educational Progress, and the College Board are all working towards implementation of open-ended assessment items as well as incorporating the use of technology in their testing programs. Scientific calculators will be allowed on the 1994 SAT and graphing calculators will be permitted in 1995—a clear movement in the direction of mathematical empowerment.

Summary

As the United States moves resolutely towards standards-based education, we must learn how to measure the quality of students' learning through performance. Traditional testing in the United States measures only the individual, valuing competition over cooperation. Just as our nation needs standards in curriculum and teaching, so too we need standards for assessment. Without such standards, we will continue, unwisely, to measure what is convenient rather than what is most important. Our nation's drive towards standards-based education will not be complete until joined with appropriate assessment (MSEB, 1993). Operating from the point of view that instruction and assessment are closely linked, that good teachers constantly assess students informally, that student self-evaluation is a vital part of learning, that formal assessments are stronger if they relate closely to the content and form of classroom instruction, and that documentation of assessment is important in connecting classroom work to external evaluation, mathematics educators may indeed be able to formulate assessment practices that will elicit improved mathematical achievement (Stenmark, 1991).

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Using Performance Assessment in Outcomes-Based Accountability Systems. ERIC Digest E533.

McLaughlin, Margaret J.; Warren, Sandra Hopfengardner

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Outcomes-based accountability ensures that the educational system is responsible for student attainment of specific learner outcomes. Increasingly, outcomes-based accountability systems are using results of both traditional assessments, such as norm-referenced tests, and authentic or performance assessments in an effort to measure broad domains of student knowledge.

Performance Assessment And Students With Disabilities Performance assessments can offer a number of benefits over the use of traditional standardized assessments for students with disabilities. The most important benefit is the potential for linking instruction and assessment: As the student completes the assessment task, the teacher uses the data to improve instruction.

To ensure success of performance assessments in an outcomes-based system, the following issues must be addressed for students with disabilities:

1. **Defining the Outcomes.** Assessment programs are constructed to measure progress toward valued educational goals. When outcome frameworks are defined too narrowly (e.g., academic content domains) and neglect other valued areas (e.g., vocational skills, personal management, social skills, and communication), the outcomes may not reflect all of the skills that are valued for students with disabilities. Assessment tasks need to be relevant to the students' program goals.
2. **Developing Performance Standards.** Standards are benchmarks against which student performance may be compared. A critical decision in designing an assessment system is whether students will be compared to themselves to determine change in their performance over time, or whether they will be compared to fixed standards of performance. Many students with disabilities cannot meet absolute standards, particularly in

academic areas. When participation in the assessment program is linked to high school diplomas, students with disabilities may be at a particular disadvantage.

3. **Assessment Accommodations.** Students with disabilities may benefit from accommodations made during assessment:
   - Additional time to complete the task.
   - Alternative testing locations.
   - Alternative means of administration (e.g., reading, interpretation, Braille).
   - Alternative supplies or equipment (e.g., computers).
   - Alternative forms of assessment.
4. **Scoring.** When assessment results must be reported in the aggregate and when results matter, such as for diplomas, scoring reliability becomes critical. Rigorous scoring is as necessary in alternative assessments as in traditional assessments.

Performance Assessments In Action: Descriptions Of Selected States And Districts

A number of states and local school districts have adopted performance assessments in their outcomes-based systems. Many of these sites have included students with disabilities in the assessments.

Kentucky: The Kentucky Educational Reform Act outlines six performance goals that all students are expected to attain upon graduation from Kentucky schools:

- Communication and math.
- Core concepts from the sciences, arts, humanities, social studies, and practical living studies.
- Self-sufficiency.
- Membership in family, work group, or community.
- Thinking and problem-solving.
- Connecting and integrating knowledge.

Students are also expected to have mastered 75 outcomes in specific academic content areas.

Performance assessments include:

- Portfolios in writing and mathematics for all students in grades 4, 8, and 12.
- Performance events for all students in grades 4, 8, and 12, with focus on mathematics,
- science, social studies, arts and humanities, and vocational education/practical living.
- Transitional assessments (open-ended and multiple-choice questions) for all students in grades 4, 8, and 12, with focus on mathematics, science, social studies, arts and humanities, and vocational education/practical living. Alternative portfolios are developed by students with severe disabilities in grades 4, 8, and 12.

All students are required to participate in the transitional assessments or alternative portfolios unless a physician provides a statement documenting significant negative impact on the student's health as a result of participating.

Maryland: The Maryland School Performance Program (MSPP) was developed as a comprehensive student outcomes accountability system. Reflecting state-level goals and strategies, student learning outcomes have been developed in the areas of reading and writing, mathematics, social studies, and science.

Assessment of student outcomes within the MSPP includes:

- Norm-referenced tests (Comprehensive Tests of Basic Skills).
- Criterion-referenced performance assessments (Maryland School Performance Assessment Program).
- Maryland Functional Tests, criterion-referenced minimal competency tests.

An alternative performance assessment is currently being proposed for students with significant cognitive disabilities.

Students with disabilities may be exempted by their IEP team from participation in any of the three assessments.

Vermont: The Vermont Assessment Program was implemented statewide during the 1991–1992 school year. The program employs both standardized assessments and portfolios to collect information about the performance of 4th and 8th graders in mathematics and writing:

- The standardized assessment used is the Uniform Assessment, which includes two 40-item multiple choice tests and a single on-demand writing task that the student must complete independently.
- Each student's portfolio is expected to include 10–20 items. From these, students select 5 to 7 "best pieces" to be scored.

School-based staffing teams determine whether or not students with disabilities are eligible for exemption from the portfolio development and assessments. Exempted students may build portfolios that do not conform to the state requirements for use in instruction.

What Are The Implications Of Using Performance Assessments For Accountability? There are a number of issues that need to be addressed when using performance assessment as part of large scale assessment programs:

- Dealing with increased program costs.
- Ensuring scoring reliability and establishing fair, yet flexible, scoring rubrics.
- Setting performance standards.
- Specifying the outcomes and indicators.
- Making certain that the assessments provide many opportunities for students to demonstrate proficiency in an outcome area.
- Using the assessment results to influence instruction either individually or at the school level.

To address these issues, it is important to include both general and special education teachers in designing and implementing the assessment program.

What Are The Considerations For Including Students With Disabilities In Outcomes-Based Accountability Systems? Despite the strong impetus to include students with disabilities in assessments, there are still major considerations that must be addressed:

1. Outcomes-based systems present special educators with a difficult conceptual switch from believing that each student with a disability should have individualized outcomes to accepting the notion of a common set of outcomes across students.
2. There is still ambiguity among assessment experts regarding how much accommodation should be provided within an assessment program.
3. When one set of scoring standards is defined for all students, with no modifications made for students with disabilities, students with disabilities may be denied diplomas or otherwise penalized.
4. When results are used for high stakes accountability, there may be greater pressure to exempt students with disabilities. Once the decision to exempt students with disabilities is made, there may also be pressure to identify more students as having disabilities in order to exempt more students from the assessments.

Strategies To Support Using Performance Assessment In Outcomes-Based Systems When using performance assessments in outcomes-based systems, educators can increase the potential for success of students with disabilities by considering the following:

- Identify meaningful outcomes.
- Define performance standards in sufficiently broad terms or in ways that emphasize growth.
- Create enough flexibility in the assessment system to accommodate individual student needs.
- Employ multiple data-gathering strategies including on-demand assessments, examples of student work, and teacher judgments.

References Derived from McLaughlin, M. J. & Warren, S. H. (1994). *Performance Assessment and Students with Disabilities: Usage in Outcomes-Based Accountability Systems. Reston, VA: The Council for Exceptional Children. Product #P5061.*

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Identifiers: ERIC Digests; *Performance Based Evaluation

Connecting Performance Assessment to Instruction: A Comparison of Behavioral Assessment, Mastery Learning, Curriculum-Based Measurement, and Performance Assessment. ERIC Digest E530.

Fuchs, Lynn S.

(http://ericae2.educ.cua.edu/edo/ed381984.htm)

A major impetus for the performance assessment movement has been the need to reconnect large-scale and classroom assessment to learning so that assessment affects learning positively, enhancing instruction.

In What Ways Can Assessment Enhance Instruction?

When teachers are better informed of the learning progress and difficulties of their students, they can make better decisions about what a student needs to learn next and how to teach that material in a manner that will maximize the student's learning. Teachers make three types of decisions using assessment results:

1. Instructional placement decisions—what the student knows and where he or she should be in the instructional sequence—i.e., what to teach next.
2. Formative evaluation decisions—information to monitor a student's learning while an instructional program is underway—how quickly progress is being made, whether the instructional program is effective, and whether a change in instructional program is needed to promote the student's learning.
3. Diagnostic decisions—which specific difficulties account for the student's inadequate progress so the teacher can remediate learning progress and design more effective instructional plans.

What Criteria Should Assessments Meet If They Are To Inform Instructional Decisions?

These assessments should meet seven criteria:

1. Measure important learning outcomes.
2. Address all three purposes of assessment.
3. Provide clear descriptions of student performance that can be linked to instructional actions.
4. Be compatible with a variety of instructional models.
5. Be easily administered, scored, and interpreted by teachers.
6. Communicate the goals of learning to teachers and students.
7. Generate accurate, meaningful information (i.e., be reliable and valid).

How Does Performance Assessment Compare To Other Methods Of Linking Assessment To Instruction?

Other methods of linking assessment to instruction include behavioral assessment, mastery learning, and curriculum-based measurement.

- **Behavioral assessment.** Behavioral assessment relies on direct observation and recording of target behaviors, using repeated observations in the setting where the behavior occurs. Environmental factors (i.e., the situations in which the behaviors occur) and their effect on the behaviors are examined.

  For example, if a teacher wanted to instruct a student in grocery shopping, she would first analyze the tasks associated with grocery shopping, put them in order, and design behavioral objectives that measure each task. Tasks might include creating a shopping list, finding the items in the store, and finding the price of each item. The teacher would then collect data on each task to identify those in which the student needed instruction. The teacher would begin instruction at the point in the task sequence where the student was unable to correctly complete the task. Once the student could correctly complete a task, the teacher would move on to the next step, moving through the sequence until all of the tasks were mastered.

  Behavioral assessment meets some but not all of the criteria for assessments listed above. It can inform the teacher about the student's placement in the instructional sequence and can help the teacher reach formative evaluation and diagnostic decisions. It communicates clearly what the essential learning content is, and it is feasible to administer, score, and interpret. In addition, its repeated measurements support the reliability of assessments. However, behavioral assessment tends to focus on discrete tasks that do not necessarily add up to important outcomes. It is limited to observable behaviors, and its small units of instruction can be difficult for students to piece together and apply to real-world outcomes. Additionally, the assessment system dictates a behavioral approach to instruction, which can limit the teacher's instructional options.

- **Mastery learning.** In mastery learning, a curriculum is broken down into a set of subskills, which are then ordered in a hierarchy of instructional objectives. For each step in the instructional hierarchy, a criterion-referenced test is designed, and a performance criterion indicating mastery of the subskill is specified. The teacher starts at the lowest step in the hierarchy, pretests, teaches the objective, and posttests on the material. If the student does not demonstrate mastery, the teacher uses corrective strategies until mastery is achieved. The teacher then advances the student to the next, more difficult step in the hierarchy.

  Like behavioral assessment, mastery learning provides information for instructional placement, formative evaluation, and diagnostic decisions. It communicates clearly to teachers and students about what is important to teach and learn. However, mastery learning suffers from the same limitation as behavioral assessment: it focuses on discrete behaviors in both assessment and instruction. Because little emphasis has been placed on its reliability or validity, users do not know what exactly is being assessed, how to interpret the resulting information, and how to use the measures effectively. Moreover, the measurement system dictates a specific approach to instruction, leaving the teacher few instructional choices. The focus of measurement changes each time a student achieves mastery of a step in the curriculum, and the steps may be of unequal difficulty, so progress cannot be judged over time. Finally, because different students need to be measured simultaneously on different steps of the curriculum, mastery learning systems can become unmanageable for teachers.

- **Curriculum-based measurement (CBM).** The focus of CBM is long-term. The teacher establishes a broad outcome for the student such as competently performing mathematics at the third-grade level at the end of the school year. Then the teacher uses CBM methods to measure student proficiency: he or she creates a pool of equivalent assessments, each of which samples the key problem types from the third grade curriculum. Each week, the student completes one or two assessments. Because each assessment is of equal difficulty and incorporates all of the important problem types to be learned over the year, the CBM data base produces a total score graphed over time to show progress over the year. Analysis of the student's performance on separate skills embedded in the assessment can also be conducted for diagnostic problem-solving to improve the instructional program.

CBM satisfies six of the criteria for assessments. It addresses the three purposes for assessment, and it incorporates standardized measurement techniques, providing reliability and validity. It offers detailed information on a student's performance on specific skills and can be used to determine how to improve an instructional program. Its measurement framework is not tied to any particular model of instruction, so a broad range of instructional options can be used. A teacher can use widely varying methods with the same child to see which method is most beneficial. Students know how they are evaluated and can set personal learning goals. In addition, the assessment demands are manageable in classroom settings, and to make them even more easily manageable, computer programs have been developed to administer assessments and manage the data.

However, CBM has two drawbacks with respect to the criteria for assessments. The system requires longer time periods to reveal growth, and the connection between assessment results and instructional decisions is not as clear as with behavioral assessment or mastery learning. Controversy also exists about the importance of the learning outcomes associated with CBM. That is, it relies on pencil and paper tasks in math and spelling and one-dimensional assessments in reading, while current discussions about outcomes stress the utility of multidimensional measures that can cut across curriculum areas.

- **Performance assessment.** Three key features of performance assessment are: (1) students construct, rather than select, responses; (2)assessment formats allow teachers to observe student behavior on tasks reflecting real-world requirements; and (3) scoring reveals patterns in students' learning and thinking.

An example of a performance assessment task is provided below:

A group of five families on your block is going to have a garage sale in which clothes, toys, and books will be sold. Your family has 12 items to sell and will need 18 square feet to display these items; the Hamletts have 13 items and need 20 square feet; the Phillips, 7 items and 10 square feet; the Garcias, 15 items and 15 square feet; the Nguyens, 10 items and 30 square feet. Rental tables measure 6 feet by 2.5 feet and cost $6.00 a day. The garage where the sale will be held is 20 feet by 30 feet. Newspaper advertising costs $11 for the first 10 words and $1.50 for each additional word.

1. How many tables will you need? Explain how you got this number.
2. Draw a diagram showing how the tables can be arranged in the garage to allow

the customers to move about with at least 4 feet between tables.

3. Write an ad for your sale that includes enough information.
4. How much money do you have to earn from your sale for the families to break even?

The students are aware of the scoring system and the criteria used to determine the scores. Their responses will be classified as exemplary, competent, minimal, inadequate, or no attempt based on a rubric that specifies the characteristics of responses in each of these categories. This problem offers one version of what a teacher's use of performance assessment might look like. In practice, many varieties of performance assessment are used. This problem measures massed mathematical concepts that include addition, multiplication, decimals, data analysis, perimeters, area, spatial sense, graphic representation, money, and communication about mathematics. Students take about 50 minutes for the assessment, and it can be completed individually or in small groups. The problem is anchored in a real-life, age-appropriate situation and represents real applications of mathematics.

How Well Does Performance Assessment Satisfy The Seven Criteria For Assessment?

Today, performance assessment is relatively new, undeveloped, and yet to be studied systematically. Many practitioners are experimenting with its use and contributing to its development and refinement. Yet they are often in the undesirable position of interpreting vague design features and operationalizing those features into specific assessments on their own. These assessments take a variety of forms, some of which are closer than others in approximating the conceptual and theoretical underpinnings of performance assessment.

1. Measure important learning outcomes. The extent to which performance assessment measures important student outcomes depends on the specific assessment problem or task. Performance assessment tasks should reflect important, real-world performances that are tied to desired student outcomes that are relevant to the workplace and everyday life. They should connect meaningfully with specific instructional methods that can be realistically managed in school settings.
2. Address all three purposes of assessment. It is unclear how performance assessment can be used to formulate instructional placement or formative evaluation decisions. Ideally, alternate forms of the problem could include the same concepts administered over time in order to yield information about individual students' progress. Although performance assessment offers the promise of addressing all three assessment purposes, specific methods for doing so have yet to be developed.
3. Provide clear descriptions of student performance that can be linked to instructional actions. When performance assessment tasks address a variety of concepts in age-appropriate, real-world situations, teachers can form a picture of student performance across skills and identify the student's problem-solving strategies. However, this depends on the teacher's skill in identifying student competencies, gleaning information about students' strategic behavior, and relating these observations to specific instructional techniques. Consultation methods or computerized strategies for generating profiles of student competence are needed.
4. Be compatible with a variety of instructional models. Theoretically, performance

assessment could be used with a variety of instructional approaches. Teachers should experiment with a variety of instructional methods as they implement performance assessment, especially with students who have serious learning problems.

5. Be easily administered, scored, and interpreted by teachers. Performance assessment can require large amounts of teacher time to design and administer assessments and to scrutinize student performances. It is easy to see how this type of assessment could generate so many different plans for intervention strategies for different students that teachers in a classroom situation with 20 or 30 students would be unable to manage. Performance assessment developers need to solve the problem of how to implement plans based on performance assessments within the constraints of classroom life.

6. Communicate the goals of learning to teachers and students. When it is clearly apparent that an assessment is aligned with instructional goals, teachers should be able to use that assessment to direct their instruction, and students should be able to use it to establish personal learning goals. This depends, however, on the extent to which the scoring rubric used is clear, concrete, and visible.

7. Generate accurate, meaningful information (i.e., be reliable and valid). Performance assessment represents a vision that can shape the future direction of classroom-based assessment, but it requires much additional scrutiny and development before it can fulfill its promise. REFS Derived from Fuchs, L. (1994). Connecting Performance Assessment to Instruction. Reston, VA: The Council for Exceptional Children. (Product #P5058).

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V . Examples of Local Schools/ Districts Adopting Education Standards

STANDARDS SETTING FOCUSES REFORM IN LOCAL DISTRICTS

(HTTP://WWW.ED.GOV/PUBS/IASA/NEWSLETTER/ STANDARDS/PT4.HTML)

School districts are not waiting for their states to complete standards; many are defining their own. Although there is no single formula for developing local standards, many communities turn to stakeholder committees—including business leaders, teachers, parents, administrators, and curriculum experts—to define content standards that become the starting point for systemic changes. Local standards setters incorporate state and national standards when available, but the community leads the process.The Niagara City (New York) Public Schools ties its reform agenda to "Standards for Excellence"—the knowledge, skills, and attitudes every graduate is expected to attain. According to Cynthia Bianco, assistant to the superintendent, "All our planning goes back to the question of 'How does it fit with the standards?"Niagara expects its graduates to become proficient in these content areas: computation, communication, science, literature, history, geography, vocabulary, civics and government, health, cultures, environment, technology, a second language, and human resources. It also expects each student to develop life-long learning skills by becoming a knowledgeable person, a complex thinker, a skilled consumer and processor of information, and an effective communicator and producer. Site-based management teams direct all of Niagara's schools, and each team develops its renewal plan and budget in connection with these standards. Charlotte-Mecklenburg (North Carolina) has developed and disseminated performance standards for students in each grade that set high expectations comparable to those of Advanced Placement courses and the International Baccalaureate Program. In an effort to ensure shared expectations between home and school, the district has also produced and disseminated to parents a brochure for each grade level on what their children will be expected to know and do by the end of the school year. As grants specialist Carol Newman reports, however, it is important not only to set standards but to design them in concert with other reforms. In Newman's view, standards are a "useful cushion" on which to rest the district's ambitious long-range goals and action agenda: comprehensive professional development, new kinds of assessments, and explicit performance standards. For example, the district's computer-based, diagnostic assessment system is criterion referenced and coordinated with local standards, year-end accountability tests, and the state's assessment program.

Charlotte-Mecklenburg's Sixth Graders are Expected to Attain the Following Communications Arts Standards

- Summarize, analyze, and evaluate various types of literature, both fiction and nonfiction;
- Produce written products in various modes including prewriting, drafting, revising, editing, and publishing;
- Explain the language structure and cultural values reflected in modern English;
- Express ideas clearly and effectively in oral contexts and use active listening skills in analyzing and evaluating spoken ideas;
- Use, read, or view media and technology and analyze the content and concepts accurately;
- Demonstrate research and study skills.

excerpted from:*Improving America's Schools: A Newsletter on Issues in School Reform*-Spring 1996

BECOMING THE BEST: STANDARDS AND ASSESSMENT DEVELOPMENT IN THE GREAT CITY SCHOOLS

PROFILES OF GREAT CITY SCHOOLS' STANDARDS AND ASSESSMENT DEVELOPMENT EFFORTS

(http://www.cgcs.org/reports/1996/standard/a9.htm)

Atlanta Public Schools

In response to a statewide initiative, Atlanta Public Schools is revising its existing standards. In so doing, Atlanta is supported by the Georgia Initiative for Math & Science (funded by the National Science Foundation), colleges of education, the Georgia Department of Education, regional labs, local business councils, the public education fund, and outside reform groups. Content standards will be used for curriculum development, performance standards development, assessment development, and program improvement.

Mathematics and science content standards (K–12) have been revised to reflect those at the national level. A systemwide task force has been formed to look at standards in the other content areas. This planning group will ultimately serve on a committee to set state standards.

Atlanta Public Schools uses a variety of assessment instruments: the Georgia Kindergarten Assessment Program, the Iowa Test of Basic Skills, the Tests of Achievement and Proficiency, the State Curriculum Based Assessments (in grades 3, 5, and 8), and the Georgia High School Graduation Tests. Atlanta is also developing standards-based assessments for grades K–12 in mathematics and science. This effort is being spearheaded by the Elementary Science Education Partners (ESEP) Program of Emory University, which is funded by a National Science Foundation grant.

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Baltimore City Public Schools

In response to state and local initiatives, Baltimore City Public Schools is in the process of developing content standards. At the 9th through 12th grade levels, a performance-based curriculum is being developed based on state standards and information provided by community businesses through a process known as DACUM (Developing a Curriculum). Professional associations, the Maryland Department of Education, colleges of education, local business councils, and outside reform groups are participating in Baltimore's standards setting process. Content standards will be used for curriculum development, performance standards development, assessment development, and program improvement.

For grades K–8, Baltimore has already completed the development and implementation of standards in mathematics, English/language arts, social studies, science, foreign language, history, arts, and health/physical fitness. Baltimore is still in the process, however, of developing content standards in these same subject areas for grades 9–12.

Baltimore City Public Schools primarily relies upon a local performance assessment and the Maryland School Performance Assessment Program to measure student progress. Baltimore is making plans to align its assessment system with new standards.

Contact: Ms. Mary R. Nicholsonne, Associate Superintendent, Division of Instruction, Baltimore Public Schools, 200 East North Avenue, Room #210, Baltimore, MD 21202. Telephone: (410) 396-8888.

Boston Public Schools

The Boston Public Schools is in the process of developing content standards as part of a broader statewide initiative. A team composed of 104 teachers, administrators, parents, community agencies, institutions of higher education, and the State Department of Education is involved in the development of the content standards. Standards development is being aligned with Goals 2000 standards, standards of professional organizations, and the Massachusetts State Common Core of Learning standards in nine content areas. Content standards will prepare students to meet statewide standards and assessments mandated by the Massachusetts Education Reform Act and will be used for curriculum development, performance and assessment standards development, and program improvement.

Currently, content standards are being developed in mathematics, English/language arts, social studies, science, foreign language, arts, and health/physical fitness for grades K–12. Content standards are also being developed for grade 9 in civics/government.

The Boston Public Schools uses the Stanford Achievement Test for assessment of all students. The district anticipates that it will change its assessment system and use the State Curriculum Frameworks to develop a complementary assessment plan. The assessment system will likely align with the state's Common Core of Learning Standards that are being developed and reviewed statewide. At present, there are small locally initiated pilot programs of new assessments being conducted in individual schools.

Contact: Mr. Ken Caldwell, Chief of Staff, Curriculum and Instruction, Boston Public Schools, 26 Court Street, Boston, MA 02108. Telephone: (617) 635-9055.

Broward County Public Schools

Broward County Public Schools has developed locally initiated content standards. The Superintendent's Ad Hoc Standards of Service Policy Committee worked with several professional associations, local business councils, parents, community groups, the Florida Department of Education, colleges of education, and outside reform groups to develop its Core Curricular Competencies. Content standards will be used for curriculum development, performance standards development, assessment development, public and system accountability, and program improvement.

Broward has completed the development of mathematics, language arts, technology, behavior, and school-to-work standards for grades K–12. A defined curriculum for kindergarten instruction is being implemented across the district. The district is also in the process of developing standards for social studies, science, and for such competencies as information manager, effective communicator, problem identifier/solver, and creative and complex thinker for grades K–12. In the future, Broward plans to develop standards in the following content areas: foreign language, art, music, health/physical fitness, and eleven competency areas.

Currently, the Broward Schools are using a variety of assessment instruments to measure student progress, including the Pupil Evaluation Program and the Stanford Achievement Test. In an attempt to complement its state assessment system, Broward is piloting a locally developed criterion-referenced algebra test (grades 2, 5, 8, 10) and plans to continue to develop criterion-based, performance and electronic portfolio assessments in all content areas for grades K–12. In order to monitor student achievement as early as possible, a recommendation for a Literacy Folder for grades K–5 is under consideration. The folder would include results from an informal reading inventory and scored student writing samples.

Contact: Dr. Frank Petruzielo, Superintendent, Broward County Public Schools, 600 Southeast 3rd Avenue, Ft. Lauderdale, FL 33301. Telephone: (305) 765-6271.

Charlotte-Mecklenburg Schools

In response to a local initiative, Charlotte-Mecklenburg Schools has completed the development and implementation of standards in core subject areas. The standards setting process included input from staff, parents, students, and community/business leaders. Professional associations, expert consultants, the North Carolina Department of Education, and the public education fund also participated in this process. Content standards are used for curriculum development, performance standards development, assessment development, and program improvement.

Charlotte has developed and implemented standards for all grades in the following subject areas: mathematics, English/language arts, social studies, science, foreign language, history, arts, economics, geography, civics/government, and health/physical fitness.

Charlotte plans to change its overall assessment system in accordance with state assessment practices.

Contact: Dr. Susan Henry, Acting Assistant Superintendent of Research, Assessment, & Planning or Betty Cunningham, Assistant Superintendent of Research, Assessment & Planning, Charlotte-Mecklenberg Public Schools, 701 East Second Street, Charlotte, NC 28202. Telephone: (704) 379-7429.

Chicago Public Schools

Chicago is in the process of developing content standards. At present, CPS has a set of learning outcomes and plans to transform the learning outcomes into content and performance standards. The learning outcomes are based on state goals and informed by the content standards of professional organizations. Several external groups such as the state department of education, Chicago Teachers Union and the Consortium on Chicago Schools Research have been involved in the development of content standards. Efforts are being made to involve local business councils, colleges of education, parents and teachers in the process. Content standards will be used for the purposes of performance standards development, assessment development, and to promote school improvement through instructional change.

Content standards for grades 4, 8, and 11 have been developed for mathematics, English/language arts, social studies, science, the arts, and health/physical fitness.

Chicago Public Schools is in the process of reviewing its system of assessment. The new system will align assessment testing with Illinois State requirements and with locally developed assessments.

Contact: Dr. John Q. Easton, Director, Department of Research, Analysis and Assessment. Office of Accountability, Chicago Public Schools, 1819 West Pershing Road, Chicago, IL 60609. Telephone: (312) 535-8080.

Cleveland Public Schools

Initiated by state action, the Cleveland Public Schools has developed content standards for language arts, mathematics, science, and social studies which describe what students should know and be able to do. Committees of teachers and administrators under the leadership of central office curriculum specialists developed the standards. External groups such as colleges of education, professional organizations, local business collaboratives, and outside reform groups were involved in developing the content standards. Critical to this development process was the alignment of standards with the Ohio State Department of Education's model curriculum/frameworks, proficiency learning outcomes, and national standards. Content standards will be used for the development and alignment of curriculum and instruction. Assessment will be used for the purpose of program improvement and accountability to parents and the community.

The content standards in language arts and mathematics were developed for grades K–12; the content standards for science and social studies (which includes history, economics, geography, civics/government, and sociology) were developed for grades pre K–12. As model curriculum/frameworks in other content areas are published by the Ohio State Department of Education, content standards will be developed in specified subject areas.

The California Achievement Tests and Ohio Proficiency Tests are used to assess student mastery of content standards. Additionally, interim assessments are being developed for teachers to use as periodic tests to measure student progress toward mastering content standards. Currently, the District is reviewing the testing program and assessment system for better alignment with content standards.

Contact: Ms. Mayethel V. White, Director, General Education Division, Cleveland Public Schools, 1380 East Sixth Street, Cleveland, OH 44114. Telephone: (216)574-8667.

Columbus Public Schools

Columbus Public Schools has completed content standards in core subject areas as part of a state and local initiative. An iterative process involving teachers, content area specialists, administrators, the Board of Education, and a three-member Board of Education Panel was used to develop content standards known as a "Course of Study." National, state, and professional organization standards were reviewed in the process of development. The district content standards align most closely with state standards. Content standards will be used for curriculum development, performance standards and assessment development, and program improvement.

Content standards are completed for mathematics, English/language arts, and science for grades K–12. Content standards for social studies, history, economics, geography are completed for grades K–8.

The Columbus Public Schools follows the requirements of the state assessment system in administering 9th and 12th grade proficiency tests as well as a system of district-based criterion referenced tests. Norm-referenced tests are still used in selected areas and at selected grade levels for specific purposes. Columbus Public Schools is in the process of changing its assessment system to align with and be complementary to the state assessment system.

Contact: Dr. Phyllis M. Wilson, Assistant Superintendent of Curriculum and Instruction, Columbus Public Schools, 270 East State Street, Columbus, OH 43215. Telephone: (614) 365-5777.

Dade County Public Schools

Dade County Public Schools has completed and implemented content standards across all grade levels and content areas. The thrust for content standards development was locally initiated based on the State's mandate that all districts must adopt student performance standards. Content standards are contained in the Competency-Based Curriculum and were developed by teams of curriculum writers who were invited to participate in the process. Additionally, several external groups such as universities, business/industry groups, and parents were involved in the process of development. National and state content standards are included in the district standards, and materials from SCANS, Florida's Blueprint 2000, Goals 2000, and specific subject standards proposed by professional organizations were used in development of the content standards as well. Content standards will be used for curriculum development, performance standards and assessment development, public and system accountability, and program improvement.

Content standards are being implemented in grades K–12 in mathematics, English/language arts, social studies, science, foreign language, history, economics, geography, civics/government, and ESOL.

Dade County Public Schools is in the process of changing its overall assessment system to align with state content standards.

Contact: Ms. Barbara Silver, District Director, Division of Foundation Skills and Advanced Academic Programs, Dade County Schools, 1500 Biscayne Boulevard, Room 327K, Miami, FL 33132. Telephone: (305) 995-1907.

Dallas Public Schools

The Dallas Public School District is completing the development of the second version of the Core Curriculum. The content is framed by the Texas Essential Elements (EEs) and the Texas Assessment of Academic Skills (TAAS). The content is aligned with national standards.

The Core Curriculum is set in a structure developed by the Texas Association for Supervision and Curriculum Development (TASCD). This framework is called the Alternative Blueprint for Curriculum Development (ABCD). The Dallas Public Schools Core Curriculum maintains a consistent pattern across all disciplines. That structural pattern includes authentic (performance) assessments at both very broad (global) and finite levels.

The State of Texas is currently in the process of revising the Texas Essential Elements. The new product will be known as the Texas Essential Knowledge and Skills (TEKS). The TEKS are in the process of review and modification. Once the TEKS are ratified by the State Board of Education, the TAAS test will also be reviewed and revised. The Dallas Public Schools will realign the content of the Core Curriculum to correlate with the TEKS.

Contact: Ms. Miriam Kelley, Executive Director, Curriculum and Instruction, Dallas Public Schools, 3700 Ross Avenue, Dallas TX 75204. Telephone: (214) 989-8367.

Dayton City Public Schools

Dayton City Schools is in the process of developing content standards as part of a broader statewide initiative. Content standards are informed by state developed curriculum frameworks as well as the content standards of professional organizations. External groups such as local business councils, colleges of education, and regional education labs have assisted the Dayton City Schools in the development of content standards. Content standards will be used for curriculum development, performance standards and assessment development, public and system accountability, and program improvement.

Completed is the development of content standards in mathematics, English/language arts, science, health/physical education and science for grades K–12. In progress is the development of social studies, including geography, history, economics and civics/government; fine arts; and foreign language for grades K–12.

Dayton City Schools has three assessment systems in place: (1) state tests, the Ohio Proficiency Test, for grades 4, 6, 9, and 12; (2) district off-year proficiency tests for grades

3, 5, and 7; and (3) competency-based tests for grades 1–8. Competency-based tests currently exist for mathematics and English/language arts. Tests are being developed in selected areas at the secondary level in the form of end-of-course examinations.

Contact: Ms. Bickley A. Lucas, Executive Director, Academic Services, Dayton Public Schools, 2013 W. Third Street, Dayton, OH 45417. Telephone: (513) 262-5320.

Denver Public Schools

The Denver Public Schools has completed draft content standards. The development of content standards was initiated by state action. The process of content standards development included community-wide meetings and an advisory board for each subject area that included teachers, parents, the state department of education, and representation from the broader community. The content standards are aligned with state content standards and reflect the work of professional organizations. Content standards will be used for curriculum development, performance standards and assessment development, public accountability, and program improvement.

Content standards are being developed in mathematics, English/language arts, social studies, science, foreign language, history, arts, geography, and civics and government for grades K–12 and are written in terms of desired achievement at grades 4, 8, and 12.

The Denver Public School district anticipates changing its overall assessment system to complement the state system of assessment. Currently, performance-based assessments are in use in grades 1–11 in four content areas.

Contact: Ms. Kris Styes, Teacher on Special Assignment, Curriculum/Instructional Support Services, Denver Public Schools, 975 Grant Street #100, Denver, CO 80203. Telephone: (303) 764-3744.

Detroit Public Schools

Detroit Public Schools has completed the development and implementation of state-initiated standards. The district's Department of Curriculum and Development, along with professionals from each discipline, worked together to develop these standards. The Michigan Department of Education, colleges of education, and local business councils also participated in the standards setting process. Content standards are used for curriculum development, performance standards development, assessment development, public and system accountability, and program improvement.

Detroit Public Schools has content standards in mathematics, English/language arts, social studies, science, history, arts, and health/physical fitness for grades K–12. DPS also has content standards for special education.

Measures used to assess student progress include the Michigan Educational Assessment Program (MEAP) at grades 4, 5, 7, and 8 and the Metropolitan Achievement Test in grades 1–12. In an effort to align its assessment system with new standards, Detroit continues to develop assessments in grades K–12.

Contact: Dr. Ellen Stephens, Deputy Superintendent, Division of Educational Services, Detroit Public Schools, 228 Main Sail Court, Detroit, MI 48207. Telephone: (313) 494-1082.

El Paso Independent School District

In response to both Goals 2000 and a statewide initiative, El Paso is currently in the process of developing content standards. Professional associations, the Texas Department of Education, regional labs, colleges of education, local business councils, the public education fund, and outside reform groups are assisting El Paso with the development of its standards. Content standards will be used for curriculum development, performance standards development, assessment development, teacher/administrator accountability, program improvement, and staff development.

The El Paso Independent School District uses the Texas Assessment of Academic Skills to measure student progress. El Paso is not in the process of changing its assessment system, for it will continue to use those assessment instruments mandated by the state. Currently, Texas mandates end of course exams in Algebra I and Biology I. State-mandated end of course exams are being developed for Spanish III, Geometry, Chemistry I, US History, World Geography, English II, and Science IV.

Contact: Ms. Joanne Foster, Executive Director, Program Development/Support, El Paso Public Schools, 6531 Boeing Drive, El Paso, TX 79925. Telephone: (915) 779-4297.

Fort Worth Independent School District

The Fort Worth Independent School District is in the process of developing content standards in core subject areas. Fort Worth is a partner with the New Standards Project in the standards setting and assessment development process. Fort Worth collaborated with other urban districts in the standards setting process. Content standards will be used for curriculum development, performance standards development, assessment development, public accountability and program improvement.

Currently, Fort Worth Public Schools is developing standards for grades K–12 in mathematics, English/language arts, and science.

The Fort Worth Independent School District uses the Texas Assessment of Academic Skills. This assessment instrument is administered to students in grades 3–10. In addition to the TAAS, Fort Worth will use New Standards assessments in some schools for grades 4, 8, and 10 in mathematics, English/language arts, science, and applied learning. The district assessment plan will supplement state accountability measures. A sample of students will also be assessed using a norm-referenced test for grades 4, 8, and 10 in mathematics, English/language arts, science, and applied learning. The new district assessment plan will supplement the state plan.

Contact: Dr. Nancy Timmons, Assistant Superintendent of Administrative Services, Fort Worth Public Schools, 3210 West Lancaster Avenue, Fort Worth, TX 76107. Telephone: (817) 871-2382.

Fresno Unified School District

In response to a local initiative, the Fresno Unified School District is in the process of developing and revising academic content standards. In 1989, standards of student expectancies were developed for all content areas. These standards are updated based on framework revisions and textbook adoption cycles. The following groups have participated in the development of Fresno's content standards: professional associations, the local university, the Fresno County Office of Education, teachers, content area coordinators, the California Department of Education, colleges of education, local business councils, and outside reform groups. Content standards will be used for curriculum development, performance standards development, assessment development, and program improvement.

Fresno is developing and revising standards for grades K–12 in the following content areas: mathematics, English/language arts, social studies, science, foreign language, history, arts, economics, geography, civics/government, health/physical fitness, consumer home economics, technical education, and business education.

The FUSD assessment system is comprised of various assessment instruments, including the Individual Test of Academic Skills, the Basic Skill Assessment, and a series of criterion referenced tests. When FUSD receives direction from California, it will change its assessment system to align with new standards.

Contact: Ms. Janice Klemm, Assistant Superintendent, Instructional Support Services, Fresno Unified School District, Tulare & M Streets, Fresno, CA 93721. Telephone: (209) 441-3662.

Houston Independent School District

The Houston Independent School District has undertaken a districtwide initiative to align the curriculum as it is written, taught, and tested to ensure that all students will have equitable opportunities to learn essential concepts and skills. Beginning with the 1995–96 school year, students entering ninth grade will be working toward a new Core Diploma or a new Advanced Diploma. Administrators, teachers, community groups, business advisory committees, the Texas state department of education, and colleges of education were involved in the districtwide initiative to align the curriculum with new content standards.

Content standards have been developed in mathematics, English/language arts, social studies, science, foreign language, history, arts, and health/physical fitness for grades pre K–12. Standards for geography, economics and civics/government have also been developed.

The Houston Independent School District is using developmental checklists for end of the year assessment for grades pre K–2. A narrative form of reporting progress to parents, the Primary Progress Report Program, is being used in almost 70 schools to replace the traditional number or letter grade system. The Texas Assessment of Academic Skills is administered in grades 3–8 for reading and mathematics and in grades 4 and 8 for writing. Additionally, as a graduation requirement beginning in grade 10, students must take the Texas Assessment of Academic Skills Exit test until they pass all three areas of the exam.

Contact: Dr. Kathryn Sanchez, Assistant Superintendent, Research and Evaulation, Houston Independent School District, 3830 Richmond Avenue, Houston, TX 77027. Telephone: (713) 892-6350.

Los Angeles Unified School District

The standards setting process in the Los Angeles Unified School District focused on using the criteria provided in the National Education Goals Panel's "Promises to Keep: Creating High Standards for American Students." Using those criteria, standards were drafted by a task force which had representative constituents from all forty-nine geographical school complexes consisting of 200 teachers, students, parents, administrators, support staff members and community members. Each complex consists of a senior high school with their feeder middle and elementary schools.

The first draft of the LAUSD standards is in mathematics, language arts, history/social science, and science. Math and language arts standards will be benchmarked in grades 3, 7, and 9. History/social science, and science will be benchmarked in grades 4, 7, and 9.

LAUSD has used the Comprehensive Test of Basic Skills in grades 1–11 and Aprenda in grades 1–6 to measure student progress across the district. Individual schools have used portfolios and rubric-scored work samples as part of their ongoing assessment, but these have not been incorporated into the districtwide assessment system. Currently, the district is evaluating commercial norm-referenced achievement test batteries to replace the CTBS. The district will continue to administer Aprenda. Additionally, the district is working with CRESST to develop performance assessments to supplement and complement the norm-referenced test. Assessments in language arts and mathematics are being developed for grades 3, 7, and 9. Assessments for history/social science and science are being developed for grades 4, 7, and senior high school. Based on input from high school teachers, administrators, and content specialists, high school assessments are being developed for the end of the required history core (grade 11) and for the end of each student's completion of two years of high school laboratory science.

Contact: Ms. Amelia McKenna, Assistant Superintendent of Instruction/Mr. John Nagata, Assistant Superintendent of Information Technology, Los Angeles Unified School District, 450 North Grand Avenue, Los Angeles, CA 90012. Telephone: (213) 625-6040 and (213) 625-4906.

Memphis City Schools

This year, the Memphis City Schools initiated the process of developing content standards under the Federal Goals 2000 effort. These standards are aligned with state-mandated "curriculum frameworks." The process of development is a collaborative effort between Memphis City Schools personnel and area college and university faculty organized into "content action teams." Selected state and national standards were reviewed in the process as standards were developed by the action teams under the direction of the MCS Research, Standards and Accountability staff. Currently, content standards are in the final stage of development and will be used for curriculum design, selection and alignment across all grade levels. In addition, the content standards will guide development of performance standards and assessments to ensure system accountability and program improvement.

The content standards are being developed for grades K–12 in mathematics, English/language arts, social studies, science, foreign language, arts, and health/physical fitness.

To support the use of newly developed content standards, Memphis City Schools is in the process of broadening its overall assessment system. During the 1995–96 academic year, performance assessments matched to content standards will be piloted in 10 selected schools; however, students will continue to be assessed using a combination of national standardized tests and state criterion referenced tests.

Contact: Dr. Recardo Sockwell, Executive Director, Research, Standards, and Accountability, Memphis City Schools, 2597 Avery Avenue, Room 210 Memphis, TN 38112. Telephone: (901) 325-5533.

Minneapolis Public Schools

Minneapolis Public Schools is in the process of developing content standards in response to the needs of the community. Content development teams are in the process of developing standards with input from teachers, students, parents, the business community, community organizations, institutions of higher education, the Minnesota Department of Education, and regional education laboratories. The development process has included a review of existing Minneapolis Public School standards as well as state, national, and content standards from other school districts. The content standards will be used for curriculum development, and for performance standards and assessment development.

Currently, content standards have been developed in five core content areas: mathematics, English/language arts, social studies, science, and fine arts for grades K–12. Plans are to begin developing content standards in world languages, physical education, industrial technology, media technology, and health and family life.

Minneapolis Public School students are tested using the California Achievement Test as well as state and district developed assessments such as the Transitional Writing Test, math problem solving, and PLAN (which includes assessments in English, Mathematics, Reading, and Science Reasoning). The district plans to change its overall assessment system to align with new state and local content standards. Alternative assessments are being explored.

Contact: Ms. Kathy Cahill, Principal on Special Assignment, Minneapolis Public Schools, 925 Delaware Street, S.E., Minneapolis, MN 55414. Telephone: (612) 627-2165.

Nashville-Davidson Metropolitan Public Schools

In response to a statewide initiative, Nashville Schools is developing content standards. After reviewing national and state standards, each subject area coordinator developed local standards. Subject area coordinators also enlisted the expertise of professional associations, the Chamber of Commerce, parent groups, members of site-based decision teams, the Tennessee Department of Education, colleges of education, and local business councils. Content standards will be used for performance standards development, assessment development, public accountability, and program improvement.

Nashville is in the process of developing content standards for all grades in the following content areas: mathematics, English/language arts, social studies, science, foreign language, history, and arts.

Nashville Schools is in the process of developing its assessment system to align with new standards. It will also continue using its state's assessment system. A Performance Assessment Team has been organized to investigate the possibility of developing a curriculum-based assessment system to more closely measure growth in student performance.

Contact: Dr. Brent Poulton, Director of Federal Projects, Instruction and Administration, Nashville-Davidson Schools, 2601 Bransford Avenue, Nashville, TN 37204. Telephone: (615) 259-8681.

New York City Public Schools

New York City Public Schools has completed the development of its locally initiated content standards. Teachers, supervisors, parents, and members of the private sector developed learning expectations in eight broad areas, seven of which were adopted from state frameworks. Based on these learning expectations, field tests were conducted. Input from these field tests provided feedback for changes. Professional associations, the New York Department of Education, colleges of education, local business councils, the public education fund, and outside reform groups also participated in the development of New York City's standards. Content standards will be used for curriculum development, assessment development, public and system accountability, and program improvement.

New York City Public Schools has completed the development of content standards in mathematics, English/language arts, social studies, science, foreign language, history, arts, economics, geography, civics/government, health/physical fitness, ESL, and occupational/vocational education for grades pre K–12.

Currently, New York City Public Schools uses a variety of norm-referenced and performance-based assessment instruments to measure student progress, such as the New York State Regents Testing Program, the California Achievement Test in Mathematics, and performance assessments in reading and mathematics. The assessment program is being restructured to align with new performance standards that are being developed to align with the new content standards. The emphasis is on multicomponent assessment systems, such as "on-demand" performance assessments, portfolios, and multiple-choice tests.

Contact: Dr. Robert Tobias, Director of Research, New York City Public Schools, 110 Livingston Street, Room 728, Brooklyn, NY 11201. Telephone: (718) 935-3767.

Newark Public Schools

Newark Public Schools is in the process of developing content standards as part of a broader statewide initiative. Curriculum guides are being reviewed. Some of the guides will be revised to better articulate the State's Core Curriculum Standards. Some of the groups involved in Newark's standards setting process include: professional associations, parents, community leaders, and the New Jersey Department of Education. Content standards will be used for curriculum development, performance standards development, assessment development, program improvement, and staff development.

Newark is in the process of developing content standards for grades K–12 in the following content areas: mathematics, English/language arts, social studies, science, foreign language, history, arts, and health/physical fitness.

While Newark currently uses the Stanford Achievement Test to assess students, a new assessment instrument will be chosen for the 1996–1997 academic year.

Contact: Mrs. Catherine M. Murphy, Acting Associate Assistant Executive Superintendent, Office of Curriculum Services, Newark Public Schools, 2 Cedar Street, Newark, NJ 07102. Telephone: (201) 733-7173.

Norfolk Public Schools

In response to a statewide initiative, Norfolk Public Schools is developing content standards. Administrators and teachers have worked on state committees to develop and revise standards. Professional associations, the Virginia Department of Education, colleges of education, the public education fund, and outside reform groups have assisted in the development of Norfolk's standards. Content standards will be used for curriculum development, performance standards development, assessment development, public and system accountability, and program improvement.

Norfolk is in the process of developing content standards in mathematics, English/language arts, social studies, and science for all grades. Norfolk is also in the process of revising the curriculum based on the new state content standards (Standards of Learning) in English/language arts, mathematics, science and social studies.

Norfolk Public Schools primarily relies upon a series of criterion-referenced tests, the Literacy Passport Test, and the Iowa Test of Basic Skills, to measure student progress. Although Norfolk is currently not in the process of changing its assessment system to align with new standards, it does plan to develop complementary assessments for grade K–12 in mathematics, English/language arts, social studies, and science. In the future, Norfolk will use the ITBS; district-developed, criterion-referenced tests; and portfolio assessments.

Contact: Dr. Margaret Saunders, Assistant Superintendent, Instructional Support Services, Norfolk Public Schools, P.O. Box 1357, Norfolk, VA 23501. Telephone: (804) 441-2141.

Oakland Public Schools

The Oakland Public Schools has developed content standards based on national initiatives for each subject area and the California State Frameworks. Teams of teachers developed the district's Core Curriculum in English/language arts, history/social studies, mathematics and science based on the State Frameworks. The Board of Education approved the Core Curriculum in 1993.

Content standards for each subject area in grades K–12 were derived from the Core Curriculum. Additionally, this year, content standards in foreign language for grades 4, 5, 8, 10, 11 and 12 and in elementary music will be developed and finalized. Content standards will be used for curriculum development, performance standards and assessment development, program and system accountability, and curricular improvement.

The California Test of Basic Skills and the California Achievement Test are used in the Oakland Public Schools. The district is beginning to develop alternative assessment practices such as literacy portfolios and work sampling. New reporting documents for elementary grades calling for evaluations based on performance standards are being piloted this year in 22 elementary schools.

Contact: Ms. Alice Kawazoe, Director of Curriculum and Staff Development, Oakland Unified School District, 1025 Second Avenue, Oakland, CA 94606. Telephone: (510) 836-8253.

Omaha Public Schools

The Omaha Public Schools has completed locally initiated content standards for all grade levels and most subject areas. Content standards were developed for each subject area by a district Focus Committee. Business leaders, community representatives, colleges of education, parents, and students were all involved in the development of content standards. National, state, and professional organizations' content standards were used as references in the development of district standards. Content standards are used for curriculum development, performance standards development, public and system accountability, and program improvement.

Content standards are completed and have been implemented in all subject areas in grades K–12, including mathematics, English/language arts, social studies, science, foreign language, history, arts, economics, geography, music, ESL, civics/government, and health. Additionally, standards have been completed and implemented in the areas of business education for grades 9–12, family and consumer sciences and industrial technology for grades 7–12. Content standards will be revised every seven years.

Omaha Public Schools uses a combination of standardized assessment instruments such as the California Achievement Test and the district-developed Benchmark Assessment Program to evaluate the district curriculum. Benchmark Assessment instruments are criterion-referenced and administered at every grade level in all subject areas. Extensive analysis of the benchmark assessment instruments show high validity and reliability when used as designed. Portfolio assessments and performance-based assessments are part of the Benchmark program.

Contact: Mr. Ron Meyer, Supervisor of Special Projects, Instruction and Special Education, Omaha Public Schools, 3215 Cuming Street, Omaha, NE 68131. Telephone: (402) 557-2414.

The School District of Philadelphia

Responding to state and local initiatives, the School District of Philadelphia is developing content standards, benchmarks, and performance indicators in seven content areas and six cross-cutting competencies. The development of Philadelphia's standards is a community-wide effort. Over 200 teachers, administrators, parents, community partners, and higher education representatives served on district writing teams to draft the first set of standards. A comprehensive broad-based public review process will provide commentary on these drafts, resulting in their revision and adoption by the Board of Education in August 1996. Content standards, benchmarks, and performance indicators will be used for curriculum development, performance standards development, assessment development, public and system accountability, and program improvement.

Philadelphia is in the process of developing content standards, benchmarks, and performance indicators for grades 4, 8, and 11 in the content areas of English/language arts, mathematics, science, social studies, the arts, world languages, and health and physical education. These content areas are being integrated with cross-cutting competencies including citizenship, communication, multicultural competence, problem solving, and school-to-career (workplace and higher education readiness skills) and technology.

The School District of Philadelphia uses the Stanford 9 to assess its students in English/language arts, mathematics, and science in grades 2, 4, 6, 8, and 11. In the future, Philadelphia plans to develop a system of assessment that gauges the acquisition of knowledge and expertise tied to standards; collect and score student work generated by relevant assessment and learning activities; and use scoring processes to reach a consensus about realistic performance standards that reflect high expectations.

Contact: Dr. Joseph A. Jacovino, Director, Office of Curriculum Support, School District of Philadelphia, Administrative Building, Room 330, 21st and the Parkway, Philadelphia, PA 19103. Telephone: (215) 299-7797.

Pittsburgh Public Schools

Pittsburgh Public Schools is a charter partner of the New Standards Project and is in the process of developing content standards. In addition to the New Standards Project, the district has consulted with the Pennsylvania Department of Education, local business councils, colleges of education, and other outside reform groups in the development of these content standards. Content standards are being used to develop Core Curriculum Frameworks, which include performance standards, indicators, and assessment strategies. In addition, a system of accountability which coordinates the system is under development.

Core Curriculum Frameworks are being developed in the benchmark years of grades 3, 5, 8, and 10 in all content strands.

The district has also been developing a Comprehensive Assessment System. The system includes norm-reference tests such as the Iowa Test of Basic Skills, state assessments, and standard-referenced tests, such as the New Standards Portfolio Assessments and the New Standards Reference Exams in literacy and mathematics.

Contact: Ms. Lynn Mariaskin, Coordinator, Teaching, Learning, and Assessment, Department of Educational Design and Assessment, Pittsburgh Public Schools, Connelley Education Center, 1501 Bedford Avenue, Pittsburgh, PA 15219. Telephone: (412) 338-8049.

Providence Public Schools

The Providence Public Schools is committed to improving teaching and learning in the classroom. To achieve the goal, the district has developed a Framework of Teaching & Learning as part of its Outcomes, Assessments & Teaching Strategies (OATS) document. The framework contains eight districtwide outcomes all students will be expected to achieve in order to graduate. All subject areas/programs are also developing frameworks for their own disciplines. These frameworks also contain exit outcomes for the discipline. Student progress toward the district and subject area outcomes is assessed at critical junctures in a student's educational experience. These occur at grades 4, 8, 10, and 12. Over 200 educators, mostly teachers, have been involved in the standards setting efforts. A support infrastructure, again composed mostly of teachers, has been established to help keep students at the center of district decision making. Many individuals working on local reform committees also serve on committees for the State Department of Education and federal Goals 2000 initiative. The standards contained in the frameworks will be used to set high expectations for students. Once teachers can articulate what they expect of students, they can then decide how to deliver instruction and assess student progress toward the goals. The standards will become the primary focus of the district's professional development program.

The following subject areas and programs will have their frameworks completed by June 1996: bilingual, English, ESL, foreign languages, health & physical education, literacy, mathematics, science, social studies, guidance, music, and visual/performing arts. The following subject areas or programs are just beginning their standards projects and will be completed by June 1997: adult & parent education, business education, health/nurse, home economics, industrial technology, and special education.

Assessment is tied directly to the standards. Students are assessed to determine their progress toward the district and subject area outcomes. Students and teachers are the two primary beneficiaries of assessment results. On the one hand, a student's strengths are identified and reinforced. The other areas in which a student can improve are identified, and plans are made for additional work to be done. Teachers also benefit from the results of assessment in that it provides them with feedback regarding the effectiveness of their instruction and assessment practices.

Contact: Mr. Paul R. Gounaris, Director, Program Planning Development and Dropout Prevention, Providence Public Schools, 797 Westminster Street, Providence, RI 02903. Telephone: (401) 456-9201.

Rochester City School District

In response to a statewide initiative, the Rochester City School District is in the process of setting content standards. To develop standards, Rochester City Schools has enlisted the expertise of teachers (under the direction of subject area specialists), professional associations, the Australian Literacy Profiles, the New Standards Project, the New York State Preliminary Framework, the Connecticut Common Core, and the PACE Project. Rochester also consulted the New York State Department of Education, colleges and universities, local business councils, and outside reform groups. Content standards will be used for curriculum development, performance standards development, assessment development, public and system accountability, and program improvement.

Rochester has developed standards (grades K–12) in most content areas and is now working on developing standards for electives and bilingual and special education.

To supplement the state assessment system, Rochester is developing districtwide assessment tools. In the future, portfolios will be the basis of assessment in all grades. Rochester is also developing standards-based assessments in all core subject areas and electives for grades K–12.

Contact: Ms. Ann Pinnella Brown, Director of Research and Evaluation/Richard Stear, Director of English and Writing, Curriculum and Instruction, Rochester City School District, 131 West Broad Street, Rochester, NY 14614. Telephone: (716) 262-8559 or (716) 262-8280.

San Diego City Schools

As part of its efforts to become a standards-based district, San Diego Schools has been an active partner in the development of performance standards with the New Standards Project. The purpose of the partnership with New Standards has been to jointly develop a common standards and assessment system.

The district language arts content standards were developed by the district in cooperation with NCTE and with reference to the California State Frameworks and are K–12 in nature. District mathematics, science, and applied learning content standards were adopted from the national subject matter projects and are subdivided (junctured) to represent grades K–4, 5–8, and 9–12. Social studies content standards are being developed by the district, and contain both K–12 and specific grade level references.

Contact: Ms. Linda J. Carstens, Administrator on Special Assignment, San Diego Unified School District, 4100 Normal Street, San Diego, CA 92103-2682. Telephone: (619) 293-8464.

Seattle School District

The Seattle School District is in the process of developing state-initiated standards. To develop these standards, Seattle has consulted with teams of teachers, responded to input from a pilot year project, and used focus groups. Seattle has also had the assistance of parents, the Commission of Student Learning, a local university, the Washington Department of Education, and regional labs. Content standards will be used for curriculum development, performance standards development, assessment development, public and system accountability, and program improvement.

The Seattle School District is in the process of developing standards for grades K–12 in mathematics, English/language arts, social studies, and science. While Seattle's standards are closely aligned with national and state standards, they also have a greater focus on diversity and multicultural education.

Seattle is developing complementary district assessments for grades 2 through 12 in mathematics and English/language arts. In social studies and science, Seattle is developing assessments for grades 3, 5, 8, and 11.

Contact: Ms. Arlene Ackerman, Deputy Superintendent, Curriculum and Instruction, Seattle Public Schools, 815 4th Avenue North, Seattle, WA 98109. Telephone: (206) 298-7180.

St. Louis Public Schools

The St. Louis Public School District is in the process of developing local content standards. The district standards will draw on the Missouri Show-Me Standards and the standards set forth by various national professional organizations. The local standards will be used for curriculum revision, performance benchmarks and assessment development, and program improvement.

St. Louis is developing content standards for grades K–12 in mathematics, English/language arts, social studies, science, arts, and health/physical fitness, foreign language, career/vocational education, and character education.

In grades K–12, St. Louis uses the Stanford Achievement Test to assess student progress. The Missouri Mastery Achievement Test is administered to students in grades 3, 5, 7, and 10 and a Writing Assessment is administered to students in grades 3, 4, 5, 6, 8, and 10. St. Louis is currently in the process of changing its overall assessment system to align with newly developed content standards. An important part of that process is the development of integrated performance assessment projects for grades 1–8.

Contact: Dr. William A. Pearson, Associate Superintendent, Curriculum and Professional Development, St. Louis Public Schools, 911 Locust Street, St. Louis, MO 63101. Telephone: (314) 231-3720, ext. 202.

St. Paul Public Schools

Saint Paul Public Schools has developed locally initiated content standards based on Minnesota's graduation requirements. The content standards were developed by teams of teachers with the involvement of external groups such as the State Department of Families, Children and Learning and district curriculum advisory groups. National and state standards were used as guidelines for developing the local content standards. The content standards will be used to guide curriculum and instructional improvement.

Content standards are being developed in all subject areas, and for Limited English Proficient students and the gifted/talented program.

The Saint Paul Public Schools is in the process of revising its system of assessment. The district is participating as a pilot site for the implementation of the Minnesota Graduation Rule and is expected to use the Rule as the basis for the development of assessment tasks.

Contact: Dr. Irene McAfee, Director of Evaluation, Information and Student Services, St. Paul Public Schools, 360 Colborne Street, St. Paul, MN 55102. Telephone: (612) 290-8383.

Toledo Public Schools

In response to a statewide initiative, Toledo is in the process of developing content standards. Professional associations, the Toledo Federation of Teachers, the Toledo Association of Administrative Personnel, and the Ohio Department of Education have assisted Toledo Public Schools with its development of standards. Content standards will be used for curriculum development, performance standards development, assessment development, public accountability, and program improvement.

Toledo has completed the development of mathematics and English/language arts standards in grades K–12. Now the district is in the process of developing standards in social studies, science, history, and civics/government for grades K–12.

Toledo primarily relies upon the Metropolitan Achievement Test and the Ohio Proficiency Exam to assess student progress. As a complement to state-mandated assessment instruments, Toledo is also changing its overall assessment system. In all likelihood, district assessments will reflect state models.

Contact: Mr. Craig Cotner, Executive Director, Office of Research, Planning and Policy Development, Toledo Public Schools, Manhattan and Elm Streets, Toledo, OH 43608. Telephone: (419) 729-8422.

Tucson Unified School District

In response to a local initiative, Tucson has completed and implemented content standards in core subjects. The standards setting process included the participation of "diverse committees representing the district's constituents." The following groups also assisted in Tucson's standards development process: the Arizona Department of Education, regional labs, colleges of education, and local business councils. Content standards will be used for curriculum development, performance standards development, assessment development, and public accountability.

Tucson has content standards for grades K–12 in mathematics, English/language arts, social studies, science, foreign language, history, and health/physical fitness. Tucson also has standards in arts for grades K–8.

In addition to using district assessments, the Tucson Unified School District also administers the state-mandated norm-referenced tests. Tucson is also in the process of developing new assessments which will be tied to the state assessment system.

Contact: Mr. T. Harper, Director K–12 Curriculum, Tucson Unified School District, 1010 East 10th Street, Tucson, AZ 85717-0400. Telephone: (520) 617-7604.